Volume 5
Issue 2

RISC USER

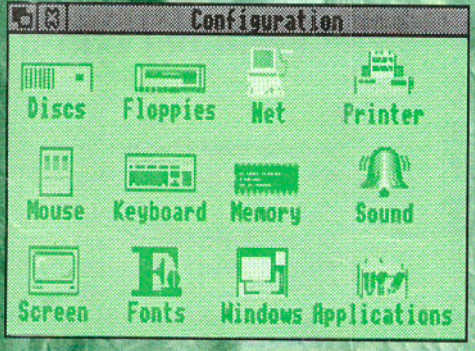
December 1991
Price £1.90

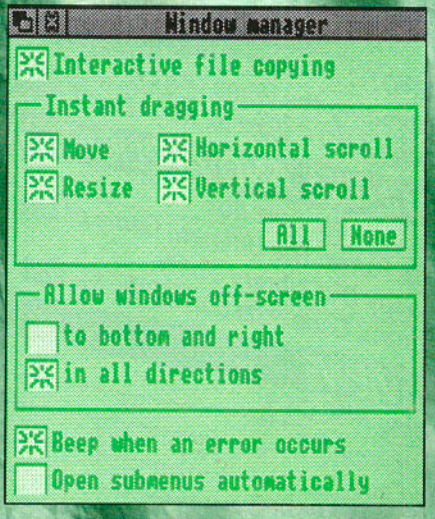
Multimedia

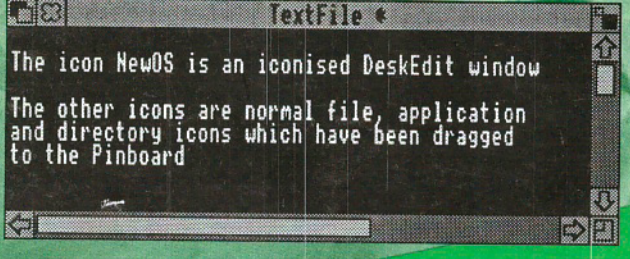
Secret Life of Templates

Floppy Disc Library

File Compression






TextFile
The icon NewOS is an iconised DeskEdit window
The other icons are normal file, application and directory icons which have been dragged to the Pinboard

Using RISC OS 3

The magazine and support group exclusively for users of the Archimedes

ISSUE 2
VOLUME 5
DECEMBER 1991

CONTENTS

FEATURES

Multimedia 13
The Secret Life of Templates 25
PC Compatibility (Part 2) 37
Into the Arc:
The Flexibility of the Archimedes (Part 2) 47
C Notebook: C Hints and Tips 50
: David Pilling's Toolkit 51
WPIDTP: Creating a Fold-out Leaflet 52
Exploiting the Wimp (Part 2) 55
Using ANSI C (Part 6): dbox Event Handlers 62

UTILITIES AND APPLICATIONS

An Icon Bar Save Box 17
Life Forms: The Ultimate Game of Life 35
Floppy Disc Library Utility 35
Control Code Insertion Utility for Edit 39

REVIEWS

Using RISC OS 3 9
Pipedream 4 21
ARCade 29
File Compression 44
The RISC OS Style Guide 60

REGULARS

News 5
Hints and Tips 66
Technical Queries 69
Postbag 71
RISC User Disc Contents 72
Personal Ads 74
Advertisers' Index 74

RISC USER

THE ARCHIMEDES MAGAZINE AND SUPPORT GROUP

RISC User is published by
RISC Developments Limited.

Co-Editors:
Dr Lee Calcraft, Mike Williams
Assistant Editor: Kristina Lucas
Technical Assistant: Mark Moxon
Production Assistant: Sheila Stoneman
Advertising: Sarah Shrive
Managing Editor: Sheridan Williams

All rights reserved. No part of this publication may be reproduced without prior written permission of the Publisher.

The Publisher cannot accept any responsibility whatsoever for errors in articles, programs or advertisements published. The opinions expressed on the pages of this journal are those of the authors and do not necessarily represent those of the Publisher, RISC Developments.

RISC Developments Ltd © 1991
117 Hatfield Road, St Albans,
Herts AL1 4JS.
Tel: St. Albans (0727) 40303
Fax: (0727) 860263

Printed by Arlon Printers

EDITORIAL

THE ACORN USER SHOW

As you probably know, the annual Acorn User Show was held at the Wembley Conference Centre in October. Both from the quality of the stands, and the numbers of visitors, the show must be viewed as a huge success. At times the exhibition halls reached capacity, and entry had to be temporarily halted until numbers subsided.

The Archimedes market is clearly thriving, which bodes well for the future of Acorn's range of machines. And of course the star of the show was the new A5000. This exciting machine, previewed in the last issue of RISC User was not only on view, but was actually on sale at the show.

RISC OS 3

Acorn's pantechnicon came loaded with machines early on the Friday, but these were soon sold out, and reserves were brought in for the Saturday and Sunday. Although the machines which went to the lucky few looked complete in every respect, and very professionally finished, their new RISC OS 3 operating system was supplied in EPROM. Now there is no disadvantage in this as far as the user is concerned, but these programmable chips cost something between £60 and £100 per set. The problem with using an equivalent ROM set, at a fraction of the cost, is the timescale. The lead time for a ROM set is something like 3 months - and you must get the software exactly right before you order large numbers of ROM sets, whereas EPROMs can be programmed as and when required.

The A5000s supplied at the show had RISC OS version 3.00 installed - and I must say that it appears to have very few bugs in it indeed. As we suggest in our article on the RISC OS 3 Desktop, Acorn will be making RISC OS 3 ROM sets available as an upgrade for all Archimedes and A3000 machines. But this software is not yet ready for ROMming, and Acorn estimate that the upgrade will not be available until early summer 1992. The one advantage of the long wait for users of the PRM is that they have plenty of time to start saving up for the RISC OS 3 version - more information on this as it becomes available.

Finally, a reminder that the Volume 4 Special Disc containing some of the best items from the year's magazine, together with some extras including the volume 4 ArcScan index file, is available at £4.95 to members - but only until 31 December. After that it will cost £9.95.

See you at the Open Day (Sunday 8th December).
L.G.C.

Hearsay II is a new release of the popular general purpose communications package.

- Fully RISC OS compliant
- Multi-tasking, including background file transfers
- VT320, VT102, VT52, ANSI & Teletype scrolling text terminals
- Viewdata & Minitel (CEPT 2) terminals
- Viewdata editor & telesoftware download
- Advanced Tektronix 4105 colour graphics
- Scalable terminal windows in all modes
- Xmodem, Xmodem 1K, Ymodem, Zmodem, Kermit, SEAlink & ASCII file transfer
- Campus 2000 terminal
- Script language based on a subset of C++
- Macro processor & fully definable keyboard
- Support for RISC OS printer drivers
- Number directory with auto-logon & password protection
- Modem drivers for most popular modems
- Vasscom and MNP link-level error correction

Hearsay II

Price £75 + VAT

Please write or phone for a full specification

Upgrade from Hearsay I, £35 + VAT + £3.10 carriage
Please return original disc to the address below.

New from RISC Developments for the Archimedes, A3000 & A5000

TYPESTUDIO

The flexible approach to creating text effects

TypeStudio allows outline fonts to be manipulated to produce professional quality adverts, posters, banners, logos, letterheads etc. - the possibilities are endless.

Text may be flowed along straight or curved paths, or moulded into almost any shape. A wide range of interesting effects may then be applied to enhance the design further. You can use all these effects on any Draw files too!

TypeStudio is intuitive to use, especially to those users familiar with Draw. Unlike other text effects packages, paths and moulds may be created and edited using the drawing tools provided, so you can do all your design work using just the one package.

TypeStudio may be used as a stand-alone package, or you may export the draw files produced, to almost any DTP or drawing package. The outline font manager and a range of fonts are supplied.

- Text along straight & curved paths
- Moulding text to shapes
- Wall, floor and graduated shadows
- 3-D effects
- Plinth effects
- Mirror effects
- Curved and straight line drawing tools
- Save in internal & Draw file formats
- Printing using RISC OS printer drivers
- Grid and zoom facilities
- Copy, rotate and magnify
- Slanted text effect
- Import of Draw files
- Full colour support

Price £45.00 + VAT

RISC Developments

RISC Developments Ltd. 117 Hatfield Road, St. Albans, Herts. AL1 4JS
Tel: (0702) 40303 Fax: (0727) 860263

• News • News • News • News

DIY CLIPART IS SMART

Following the success of *Poster*, 4Mation have announced their new *smArt* suite. *smArt* (£55 +VAT) is an application which allows you to build up pictures of DTP quality using a menu system. As menu selections are made, new graphics components are scaled and merged with the picture under development. Pictures may be saved as Draw files or transferred to DTP packages or any other applications which can handle Draw files.

The *smArt* package comes with over two dozen files on subjects ranging from shops to cars, and churches to British Isles maps. Available as separate products (at £16 +VAT) are discs on specific themes such as Leisure, Heraldry, Faces, Fashion and Dinosaurs.

The two supporting applications which complete the suite are *smArtFiler* (£35 +VAT) for creating your own *smArt* source files from sets of Draw files, and the general purpose application, *Chameleon*, used for colouring and tinting Draw files of any kind.

4Mation, who are at 14 Castle Park Road, Barnstaple, Devon EX32 8PA, tel. (0271) 25353, fax (0271) 22974, will send a free demo in return for a blank disc.

NO ILLUSIONS ABOUT SCOREDRAW

Amongst a number of new releases from Clares, *Illusionist* (£99.95 inc VAT) is a three dimensional graphics package which enables you to create any object of any colour and texture, illuminate it with coloured lights or spot lights, and render it in any 256 colour screen mode.

Of interest to musical buffs, *ScoreDraw* (£61.95) takes a Rhapsody II score, and converts it to a Draw file. All text uses outline fonts, if available, and a library of some of the the more unusual musical symbols is also provided. Clares claim that the result is a score of professional publishing quality, when printed on a laser printer.

Clares are at 98 Middlewich Road, Northwich, Cheshire, CW9 7DA, tel. (0606) 48511.

ALL FORMATS FAIRS

The following All Formats computer fairs have been announced:

Dec 1 City Hall, Candleriggs, Glasgow
Dec 14 Horticultural Hall, Westminster
Dec 15 University Sports Centre, Leeds

All run from 10 a.m. to 4 p.m.
For further details, tel. (0926) 613047

THE ARC BY VIDEO

Pedigree films have announced a range of teaching videos for use with the Archimedes range of computers. The first in the series, *Up and Running* (80 mins), introduces the concept of windows and multi-tasking, and takes a look at Edit and Paint. The second covers text processing - taking Ovation as a practical example - while the other two cover data handling and graphics.

The packs cost £14.99 each, and should be available from your local computer retailer. For further details, contact Pedigree Films Ltd., Unit B11, Trinity Business Centre, 305 Rotherhithe Street, London SE16 1EY, tel. 071 231 8271.

ARTWORKS ANNOUNCED

Computer Concepts have released preliminary information on an object orientated graphic design and illustration package for the Archimedes. *ArtWorks*, which will cost around £150 is intended to compete with packages such as CorelDraw, Adobe illustrator and Aldus Freehand. It is claimed that when used with an ARM 3 processor, *ArtWorks* can redraw complex illustrations four or five times faster than either a Mac IIci or a 486-based PC.

Using 24 bit colour precision, *ArtWorks* will provide both full process and spot colour separation. Among its many features it will have an infinite Undo which may be saved with your document; a perspective feature which allows drawings or text to be projected into the distance to give a true 3D effect; text manipulation options allowing text to be rotated or to follow a curve; and an envelope feature allowing any drawn object to be distorted to match the shape of a flexible envelope.

SILICON VISION

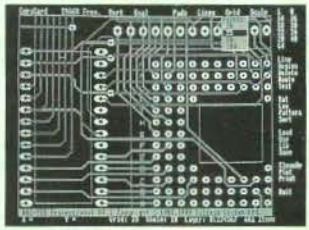
DESKTOP SOLUTIONS FOR THE ARCHIMEDES & BBC A3000

SolidTOOLS

The first fully integrated environment for 3D CAD, Photo-realistic rendering, Interactive animation, Texture mapping, Programmable animation and high resolution hardcopy to printers and plotters taking designers to new heights of design productivity and performance exceeding the capabilities of 'heavy-weight' packages on PC-compatibles and workstations which cost considerably more. The software provides 3D CAD facilities for Architectural, Engineering and Interior design offering a turnkey solution satisfying all your conceptual design and presentation requirements.

"Puts Silicon Vision at the top of the CAD market"
- A&B Computing November 1990.

ARC-PCB Schematics



The ultimate Electronic design package providing both circuit drawing and pcb layout in one design interface for a fully integrated system that surpasses all other PCB design systems in features & speed of operation for the fastest turnaround from concept to finished board design.
Features include Component schematics, Free-form circuit drawing, Automatic routing, Rats-nesting, Multiple-layers, Oval, Circular & Surface mount Pads, Component Pulling, On-line Help, Digital & Analogue tracks and up to 300,000 components. Take the lead for your PCB designs before your competitors do.

"Performs up to professional standards. Most comprehensive available on any micro"
- BBC Acorn User February 1989.

RiscBASIC

The best BASIC V compiler money can bu
Features include an optimising compile relocatable modules with multiple st commands, Window-based or comman line compilation environment, standalon code generation, in-line assembler wit powerful floating point mnemoni extensions and a Desktop developer environment from a leading Softwar House renowned for technic excellence.

"If you are looking for THE compiler to go for, and a confused about which one deserves to win the very publi battle that has been raging in the advertisements, well m preference is for RiscBASIC"
- RISC USER August 1989.

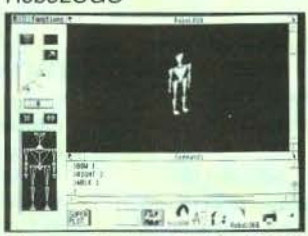
"very useful indeed for development work...produce significantly more efficient code" - Micro User July 198

SolidsRENDER

The most advanced Ray Tracing package for the Archimedes producing photo-realistic images of designs taking into account multiple colour light sources, reflections, shadows, transparencies, refractions and textures for the highest quality pictures from the leading 3D graphics experts renowned for technical excellence. The high-speed ray tracer provides anti-aliasing for smooth edges, motion blur effects, and variable camera lens for wide angle and telephoto effects.

"SolidsRENDER offers the most comprehensive and advanced object properties ... the fastest ray-tracer ... outputting the highest quality images"
- A&B Computing November 1990.

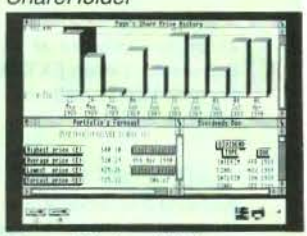
RoboLOGO



This new extension to traditional LOGO, provides three dimensional control of an articulated humanoid or animal figure based on the standard LOGO language. Natural commands such as 'Walking', 'Turning', 'Bowing', and 'Picking', etc are automatically represented graphically by natural movements of the 3D figure which is readily understood by students using LOGO as an introduction to computing. The traditional Turtlegraphics & 3D Glider features are also supported for students to further explore their school work.

"Takes turtlegraphics and LOGO programming into a new dimension. The things that the robot can do are only limited by imagination!" - Educational Computing April 1991.

ShareHolder



The complete share holder's managemen system providing all the facilities needed to automate your portfolio. Features include Company statistics, Share holdings, Transaction processing, Portfolio history, Forecasts, Dividends due, Share price updates plus built-in Calendar, Calculator and Hardcopy facilities for total integration.

"An excellent concept, the first professional share related package for the archimedes ... well thought through ... remarkably comprehensive."
- Archimedes World March 1991.

All RISC OS software run in native mode on all Archimedes Computers & BBC A3000 with 1 Mbytes.

SILICON VISION LTD, SIGNAL HOUSE, LYON ROAD, HARROW MIDDLESEX HA1 2AG, UK. TEL: 081-861 2173
FAX: 081-427 5169. TELEX: 918266 SIGNAL G.

All product titles are trademarks of Silicon Vision Ltd. All other trademarks acknowledged.
Copyright © 1991 Silicon Vision Limited. All rights reserved.

Product Catalogue

For more details on these and other software products in our range please enquire for a free copy of Silicon Vision's 'Desktop Solutions' product catalogue.

• News • News • News • News

ArtWorks has a projected release date of early 1992. For further details, contact Computer Concepts at Gaddesden Place, Hemel Hempstead, Herts, tel. (0442) 63933, fax (0442) 231632.

TRIPLE R AND FOURTH D

Impact Posters Ltd., known to the Acorn market under the trading name of 4th Dimension, have launched a set of educational software to meet the needs of the National Curriculum. Under the new trading name of Triple R Education, they have produced four software packs. *Picture Book*, for the very young, includes introductions to the alphabet and to counting, while *Money Matters* teaches familiarity with British currency.

For slightly older children, *Data Word* fulfils many of the needs for a database in the National Curriculum, while *Target Maths* helps children to learn tables, and make linear measurements.

The packs cost £19.95 each (inc. VAT and UK postage). Further details may be obtained from Triple R Education, 1 Percy Street, Sheffield, S3 8AU, tel. (0742) 700661.

TYPESTUDIO AND HEARSAY II

RISC Developments (an offshoot of Beebug) have released a new version of *Hearsay*. *Hearsay II* (£75 +VAT) is now fully multi-tasking, and will handle background file transfers. It now incorporates scalable terminal windows in all modes, a new script language based on a subset of C++, with a macro processor and fully definable keyboard. Upgrades from Hearsay I cost £35 +VAT.

From the same stable, *TypeStudio* (£45 +VAT) is a brand new package for generating special text effects. It provides a Draw-like environment in which text can be manipulated in a large number of ways. Text can be made to flow along user defined paths or be placed into a mould. Plinth, mirror and 3D effects can all be applied with ease.

RISC Developments, who have also announced a much speeded up and improved version of their *Hard Disc Companion* (£45 +VAT), are at 117 Hatfield Road, St. Albans, Herts AL1 4JS, tel. (0727) 40303, fax (0727) 860263.

SUPREME IN THE AIR

New from that bastion of BBC micro games, Superior Software, comes *Air Supremacy*, a new type of game in which you can swap between controlling aircraft and ground vehicles during a battle simulation. Level 1 is set in Europe in 1918. Level 2 takes you to the Pacific in 1944, while level 3 brings you up to the present day with a skirmish involving jet aircraft and desert tanks. Finally, level 4 unfolds in 2150 with futuristic aircraft and attack hovercraft.

Air Supremacy costs £24.95 inc VAT and postage from Superior Software at PO Box 6, Brigg, S. Humberside DN20 9NH, tel. (0652) 658585.

OPEN DAY

RISC Developments are holding an open day on Sunday 8th December. Magazine staff will be available to answer questions, and there will be demonstrations of RISC Developments products. The Beebug shop will also be in full swing to cater for all your computer related Christmas shopping. Amongst other exhibitors, Acorn will have a stand, and the A5000 will be on show - and all being well, will be in stock. The venue is 117 Hatfield Road, St. Albans, Herts AL1 4JS, tel. (0727) 40303.

ACORN'S FIRST CD-ROM

In a joint project with Hitachi, Acorn have released a CD-ROM demonstration disc for the Arc. Containing third party and public domain demos, utilities and high quality images, together with a large section containing school project work, it is being sent out to all UK secondary schools, as well as to a number of corporate users and dealers.

The material can be accessed on any of Acorn's computers fitted with a SCSI interface, CDFS utility software, and a CD-ROM drive. The disc also contains some PC-based material, which may be accessed using the PC Emulator.

Acorn Computers are on (0223) 245200. RU

ovation

Professional Desktop Publisher

Ovation sets new standards of quality and value by offering professional features in an easy-to-use package at a very competitive price. We guarantee that you will be able to produce high quality documents within hours of opening the package. Ovation provides a formidable array of desktop publishing features, yet can be used just like a traditional word processor to produce single page letters or entire books with complete ease.

Price **£99.00** Exc. VAT

Features include:

- *multitasking/multi-documents*
- *full WYSIWYG display*
- *fast spelling checker (needs 2Mb)*
- *variable views • headers/footers*
- *font size 1-1000pt • master pages*
- *import draw & sprite files*
- *full colour support • linked frames*
- *multiple columns • stylesheets*
- *definable frame borders*
- *auto hyphenation (needs 2Mb)*
- *find & replace • line drawing*
- *cut, copy, paste via clipboard*
- *dot-matrix & laser printer drivers*

Please write or phone for a full specification.

The package includes a 250 page user guide for novices and experienced users, a quick reference card, 7 outline fonts, and a range of clipart.

C Development System for the Archimedes & A3000

The C development system is a **complete C language** at an incredible price. It is ideal for beginners, but may be used by experienced C programmers to develop large applications. The package includes a **multi-tasking editor** from which programs may be compiled and executed without leaving the desktop. In fact you can compile, link and run C programs at the press of a key.

The **compiler** is quick, easy-to-use and generates ARM code which may be linked to other programs using the **linker**. Compiler errors are automatically highlighted in the editor for easy correction.

The package includes a 200 page user guide, editor, compiler, linker and library of functions. Requires 1MB RAM and single floppy drive only.

A comprehensive range of Acorn compatible **RISC OS functions** is included, allowing complete WIMP applications to be written. New libraries of functions may be created, or functions added to the existing libraries using the built-in **library manager**.

Price **£77.39** Exc. VAT

Hard Disc Companion

Version 2 of this best selling hard disc backup program has many new features, and is twice the speed of the original program.

Features include:

- *Full & incremental backups*
- *Backup to floppy or hard drives*
- *Backup only specified objects*
- *Backup/ignore specified filetypes*
- *Suspend backup & resume later*
- *Estimates time for backup*
- *Configuration scripts*
- *ADFS, SCSI and IDE compatible*
- *Ignore specified files/directories*
- *Verify option*
- *Full and selective restore*
- *May be used to backup networks*

Price £45.00 + VAT.

Upgrade from version 1, £15.00 + VAT + £1 carriage.
Please return original disc to the address below.

NEW

Star Colour Printer Driver

This RISC OS printer driver was developed in conjunction with Star Micronics for their excellent range of colour printers.. It gives superb results on both 9 and 24-pin printers, and is ideal for all applications that use RISC OS printer drivers. It is a Release 2 driver, supporting various print resolutions and 'fancy' text printing, and is suitable for the following range of printers:

- Star LC24-200 colour
- Star XB24-10 colour
- Epson JX compatible
- Star LC-200 colour
- Star LC-10 colour
- Epson LQ & SQ colour

Price **£15.00** Exc. VAT.

The official Star Micronics printer driver.

Quality software for the Archimedes and A3000

RISC developments

These products are available from all good dealers

RISC Developments Ltd. 117 Hatfield Road, St. Albans, Herts. AL1 4JS Tel: 0727 40303 Fax: 0727 860263

Using RISC OS 3

Lee Calcraft test drives the RISC OS 3 Desktop

At first sight, the RISC OS 3 Desktop doesn't look very different from its predecessor. The only immediately obvious changes are the new Task Manager icon - now an Acorn logo, and the addition of a new Apps folder beside the drive icons. Appearances, however, can be deceptive.

THE PINBOARD

One of the most useful additions to the Desktop is a sticky backdrop. Acorn call this feature a *Pinboard*, and it allows the icons of files, directories and applications to be dragged from Filer windows, and *stuck* to the pinboard. Once on the pinboard, they behave in much the same way as if they were in a Filer window. Applications can be run, files loaded and directories opened in the normal way.

This is extremely handy, as it vastly improves access to frequently used items, and avoids cluttering the Desktop with Filer windows. As with other backdrops, you can also supply a sprite which will be displayed as the Desktop background. Needless to say, you can save the current setting of your Pinboard, and even set it to be reinstated when you next power up. There is also a *Grid lock* feature, which keeps the Desktop tidy by allowing the icons to be locked to a grid position.

By rewriting the Window Manager, Acorn have also introduced a cunning feature available on rival GUIs (Graphical User Interfaces), which allows windows to be iconised. If you click on the *Close* icon of *any* Wimp window with the Shift key pressed, the window will be replaced by a small icon on the Pinboard somewhere near the top left-hand corner of the window's previous position. The window itself is not actually closed, but under the control of the Window Manager is sent to the very back of the window stack behind the Pinboard. This means that all existing Wimp tasks (except those which use composite windows) can have iconised windows under RISC OS 3.

When you double-click on such icons, the window which they represent immediately reappears, and the icon vanishes. A further cunning feature of iconised windows is that, while clicking Menu over them gives the Pinboard menu as it relates to that icon, clicking Menu with Shift pressed displays the window menu of the application owning the iconised window - assuming that it has one.

RISC OS 3 AVAILABILITY

RISC OS 3 is currently supplied with the A5000. Acorn expect to make it available as an upgrade to all Archimedes and A3000 users by early summer 1992.

Some machines - in particular the A300 series - will need a special carrier board. It is Acorn's policy to make operating system upgrades as widely available as possible, and they will therefore be providing a suitable carrier as an optional extra.

Acorn have not yet priced the upgrade. All that they will say at the moment is that it will be below £100, and will include a RISC OS 3 User Manual. We would hope that it was nearer to £50, and I understand that this is not out of the question.

While on the subject of Shift-clicking, RISC OS 3 introduces two new features. Shift-click on the *Toggle size* icon of a window leaves the icon bar uncovered by the expanded window, while Shift-double-clicking on any file will automatically load it into your text editor - whether this be Edit, DeskEdit or Source Edit.

Before leaving the Pinboard, I must also mention the missing features. It would have been useful to have some of the Filer menu options available to Pinboard objects, and additionally, it would have been very useful indeed to be able to bring the Pinboard to the front at a keypress, and then take it to

the back again - all features available in our own Backdrop (SuperBD on the Volume 4 Special Disc).

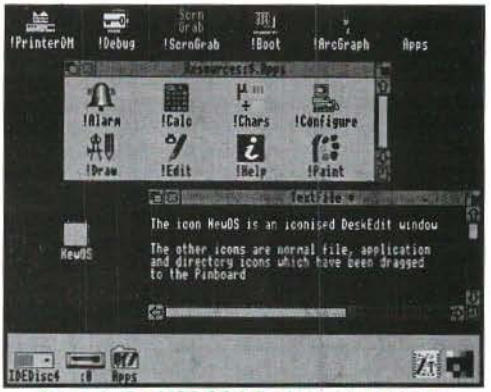


Figure 1. The RISC OS 3 Desktop, showing the Resources directory and Pinboard. Note also the new window icons

NEW ICONS

Acorn have introduced a good number of new icons in RISC OS 3. A special set are provided for the borders of Desktop windows, replacing the old character-based icons, and giving the new windows a cleaner, more modern look. A new set of icons is also provided for iconised windows; though it is desirable that each task should provide its own design to replace the default which is used if none are present.

There is also an option for high resolution icons, and an application called *SetIcon*, currently supplied on disc to A5000 purchasers, allows you to install the high res. set. These only come into their own in high resolution screen modes, and some do not look too good when used at low resolution (e.g. in mode 12). A notable example is the new high res. Basic icon, which when used in a high resolution mode, actually contains several readable lines of Basic in place of the black dashes of its low res. counterpart. But in mode 12, both it and the Text icon look somewhat messy.

RESOURCES:$.APPS

RISC OS 3's new *Apps* icon controls the new Resources filing system. This contains resources for RISC OS 3's many modules, as well as its system sprites and three built-in outline fonts (Corpus, Trinity and Homerton). Clicking Select over the icon opens the directory *Apps*, which contains the eight built-in applications (see fig. 1). These can all be installed on the icon bar in the normal way, as and when required. Of the eight, Alarm, Draw, Edit, Paint and Configure have been significantly improved, as mentioned in last month's preview of the A5000.

Because this article focuses on the RISC OS 3 Desktop, I will take a closer look at the revamped Configure application, which is far wider ranging in scope than its predecessor, allowing a number of new Desktop features to be set up.

CONFIGURE

When you double-click on the Configure icon in the Resources:Apps directory, it installs on the icon bar as you would expect. But clicking on this icon opens a window containing icons representing twelve configuration windows - including ones for discs, printer, screen, fonts, memory and windows. Clicking on each of these opens its own configuration dialogue box. Configuration settings can be saved from a save box on the icon bar menu, and loaded by dragging a configuration file to the icon bar icon.

The Screen configure option allows you to set one of six different monitor types, among other things, including the new *LCD* type, paving the way for the rumoured Acorn laptop. The memory and font boxes provide simple ways of setting up features such as default screen, sprite and RAM disc allocations, and things like FontMax, which on RISC OS 2 can usually only be achieved by dint of typing at the command line.

The Window Manager settings (accessed from the Window configuration box) will be of particular interest to Desktop users, because they introduce a number of new features. The four instant dragging options (Move, Horizontal scroll, Resize and Vertical scroll) will all be fairly familiar to RISC OS 2 users, but there are two new options which allow windows to move outside the screen area. You can select *all directions*, or just *bottom and right*. The first option is probably the most

useful. With this set, the Window Manager ignores the setting of the *No bounds* bit in the window flags block, allowing windows to be pushed almost completely out of view. This is an excellent feature, and helps keep the Desktop uncluttered. I should add, however, that there is currently (RISC OS ver. 3.00) a bug in the code which reads the state of the two icons concerned, and you do not always seem to get the option which you select. Incidentally, RISC OS 2 users who require the *no bounds* feature should see *The Secret Life of Templates* elsewhere in this issue.

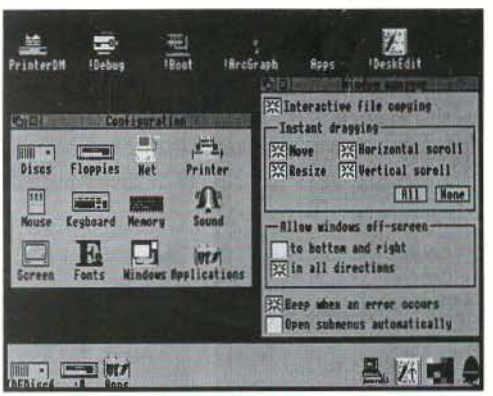


Figure 2. Configuring the new Desktop

You can also set sub-menus to be opened automatically from this dialogue box. Thus if you pause the pointer on any menu entry with an arrow off it, the corresponding sub-menu (or dialogue box) will be opened automatically. You can also set the time delay used for this action using a command line Configure option. Another new feature launched from this dialogue box is interactive file copying. With this set, certain filing operations, such as copy, format and the new file find, will function without freezing the Desktop. A useful dialogue box is displayed during such processes, though it should not be flashed on the screen during short operations - at 13 MIPs it is just a flicker on the Desktop.

NEW DISC FORMATS

The most important change as far as disc handling is concerned is the number of formats which RISC OS 3 now supports. If you select the *Format* entry in the floppy drive menu, you are offered four possible Acorn formats, including the new 1.6 Mbyte format (which requires special high density floppies). Note however, that this format is only possible through the use of new hardware - you will need a new disc interface (not just a new floppy drive controller chip), and a new high density floppy drive. These of course come as standard on the A5000.

The *Format* sub-menu has two further new entries:

Current format and
Other formats

The first causes the floppy in the current drive to be checked, and its format displayed. Moreover, if the disc is unformatted, RISC OS 3 actually tells you as much - rather than the delayed and confusing response of its predecessor.

The *Other formats* entry leads to a list of four DOS and two ATARI formats which can be read or written to - though again, the high density ones (DOS 1.2 and 1.44 Mbytes) need high density hardware, and do not appear on the menu if it is not present. And of course, when you open Filer windows on these *foreign* discs, you get a fully fledged display allowing you to drag files to and from native Acorn formats.

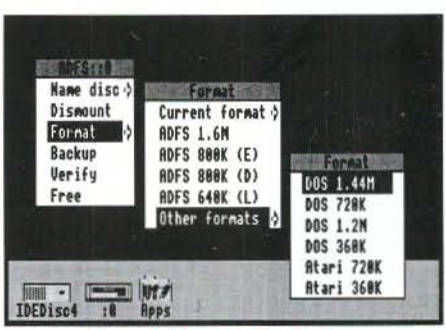


Figure 3. The new disc options

THE FILER

Many Filer operations are now fully multi-tasking, as mentioned above - including a useful new option to set access

continued on page 16

The Electronic Font Foundry

Purveyors of High Quality Fonts for Archimedes computers,
The *only DTP and font specialists.*

Call us first or last for:

Software:
- Fonts in abundance
- Other language fonts
- DTP packages
- Printer drivers
- Utilities
- Clip Art
- Emulators

Hardware:
- Archimedes
- Printers
- Monitors
- Scanners
- SCSI Drives
- Arm 3
- RAM

Also:
- Training
- Custom fonts & logos
- DTP systems

Italian Industrial 736™

A slightly condensed regular face, which has many hairlines and beautiful, fine serifs. This face is also known as Torino.

Book
Book Italic

These two fonts for £25.00

Varsity University Roman™

A very popular font in the 20's. It often appeared in trendy publications such as Vogue.

Varsity

This font for £12.00

Sky Peignot™

Sky was designed in the mid thirties by A.M. Cassandre. A very radical face in its time, it is making a comeback today.

Light
DemiBold
Bold

These three fonts for £29.00

Primary

Specially designed to aid in teaching children how to read and write.

Regular
Bold

These two fonts for £19.00

Monk Cloister Black®

Monk is a traditional "Olde" typeface, appearing dense and condensed. It is also more elaborately decorated than our Church or OldEnglish

This font for £35.00

Above are extracts from our comprehensive font catalogue, our fonts are made to the highest specification and are very reasonably priced. We also sell other DTP related software and most hardware. We may not be the very cheapest, but we are certainly the best and most helpful; for genuine expert advice or a full catalugue and price list, write to us, fax or phone us:

The **Electronic Font Foundry**
Granville House,
50-52, Upper Village Road,
Ascot,
Berkshire. SL5 7AQ
Telephone: 0344 28698 **Facsimile: 0344 872923**

All prices are ex-delivery & VAT, and are subject to change.

Multimedia

Ian Lynch surveys new developments in a field in which the Arc looks likely to excel.

INTRODUCTION

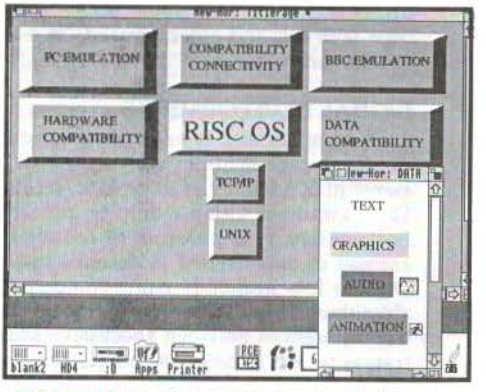
The word *multimedia* simply means an ability to handle different data types, and in a sense the BBC B was perhaps one of the first multimedia machines. However, in more modern contexts, multimedia involves stimulating our visual and auditory senses with information which is of at least the quality we are used to from television, video and hi-fi music players. The term *integrated media* describes the delivery of the different information types in a coherent unit, and *participative interaction* relates the user to the application. These are, in many ways, more helpful than the catchall, 'multimedia'.

EVOLUTION

The original IBM PC was actually a retrograde step in multimedia terms when compared for example, with a BBC B. MS-DOS was primarily designed as a platform for simple text based systems such as word processing, and spreadsheets used in offices. Data types such as digital audio and high quality colour graphics being relatively heavy consumers of storage and processor power, were in those days difficult to achieve. The influence of the Apple Macintosh in the mid-eighties changed this with a graphical representation of data becoming widely accepted as a better way of communicating with the user. The Mac with its desktop publishing and the Atari ST with its audio capability pointed the way to broader uses of computing. In 1987, the Archimedes showed what was possible with animation, and to-day there is increased use of applications combining mixtures of text, graphics and animation.

TECHNICAL DETAILS

The aim of a good application is to present information to the user in the best way possible using the best combination of data structures. This causes technical problems, some of which have still not been solved satisfactorily. Looking at the predominant data types will illustrate why.



Title page from a presentation on the Archimedes

TEXT

Displaying high quality fonts in order to make the text attractive dictates that outline font technology will become universal. Acorn's is amongst the best with very good techniques such as anti-aliasing for improving quality. All this requires a lot of processing power, far more than needed for simple PC word processors.

AUDIO

Good quality audio requires sampling at 44 KHz, twice the highest audible frequency. If sounds are sampled at 16 bit resolution, compact disc quality can be achieved, and data needs to be transferred at 88Kbytes/s to reconstitute the sound wave assuming a sampling rate of 44 KHz. In practice 20KHz and 8 bit resolution (20Kbytes/s) will give reasonable quality, and is more than adequate for speech and lower quality music.

GRAPHICS

Even so pictures take up quite a bit of data space. An Archimedes mode 15 screen

is 640 pixels wide and 256 pixels high which makes 163,840 picture elements. If each of these is to be given 256 possible colours, 8 bits per pixel are needed (1 byte), and so it takes 160K of data to describe a mode 15 screen. You can check this by using the Task Manager. In order to cater for motion pictures at say 25 frames per second we would need to process 25 x 160K or 4 Mb of data per second. Even the fastest SCSI drives and an ARM 3 would not be able to cope with this and other demands in a real application.

DIGITAL DEVELOPMENTS

A compact disc is a very cost-effective digital storage medium with a capacity in excess of 500 Mb. Even so, at 4Mb/sec only 125 seconds of video would be possible. Fortunately, it is possible to reduce the amount of data needed to describe images without loss in quality using compression algorithms. It is also possible to record only the differences between successive video frames which reduces the amount of data still further. This principle is used in RISC User's animator program (MovieMaker) and other software.

This also helps with a further problem presented by compact disc technology, namely that data can only be transferred at 150 Kbytes/s. Although this is more than adequate for the audio for which CDs were designed, it is a major problem with video. All the information for motion video and audio have to be squeezed down to about 150/25 K or about 6K per frame. The really difficult part is to take the compressed data and reconstitute it in real time. This is a tall order indeed, and beyond the capabilities of general purpose processors at present.

ANALOGUE SOLUTIONS

If the pictures are pre-recorded on a video disc as an analogue signal, and frame sequences controlled by the computer, there is no need to read all the digital data, decompress it and display it. Video discs can hold 57000 pictures or about 35 minutes of play back time. Computer text and graphics can be mixed with the video using genlock, and even BBC Bs can manage this (e.g. the Doomsday system). This is not, however, a fully digital solution, and there is less flexibility in manipulating the data. However, analogue laser discs are still the only way of achieving high quality full screen motion video at an affordable price.

INTERACTIVE LEARNING PRODUCTIONS

One of the best implementations of laser disc interactive multimedia is the ILP system based around an A3000, an Allied Interactive genlock card and a Philips laser disc player. The whole system costs under £2000 including 3 discs on the subjects of energy, radiation and radioactivity, risk, probability and statistics. The discs and related software are available at a cost of £120 from British Nuclear Forum who sponsored their production. The base system comes with umpteen floppies, and I would advise any potential purchasers to look for a low capacity hard disc as it will make life much easier.

The development of the system took place at Newcastle University and was funded to the tune of £1M. The real break through is not so much in the technology itself, but the way in which it is used. The system is interactive and participative to a far greater degree than other supposedly interactive multimedia systems. ILP are successful because they make the user feel part of what is going on. For example, in the introductory sequence of the simulation on one side of the risk disc, you are taken along a busy office corridor with people jostling and talking to you. You really feel as if it is happening, and this is the key to its success.

The graphics are superb, and it is often very difficult to tell which parts of the display are video and which are computer overlays. On the energy disc, a snooker player invites you to choose a ball for him to pot. You can drag timing gates to different parts of the table and measure the speed of the balls as they pass through and verify the laws of motion. Real snooker player, real table, simulated gates, so how is it done? Since the video plays frames at a rate of 25/second, the software can use the number

of frames between events to work out how long something takes. For example, if the ball is in the first gate in frame 2000 and in the second gate in frame 2100, it took 100 1/25ths of a second, or 4 seconds, to travel the distance between the gates. Obviously the timing precision is then limited to 1/25th second.

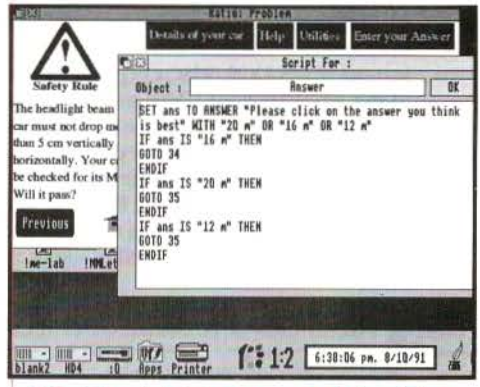
I consider the ILP system to be the pinnacle of computer aided learning so far achieved. The energy disc won an international Nebbie award in Lincoln, Nabraska in 1990. If anything justified buying an Archimedes in an educational environment, this application does. Even non-Acorn schools should consider this as an essential teaching tool since it is likely to be used as a dedicated system . Careful design allows use of one system with a class, and there is literally years of work on the three discs, with data equivalent to more than the entire software collection in most schools. This is backed by copyright-free worksheets and comprehensive teacher's notes. With this in mind, the price is astonishingly reasonable. Bear in mind that a single PC disc can cost £800, and I have yet to see any of the same quality.

ILP is now a private company, and are producing more diverse products. One is a catalogue of the art treasures in the Russian State Museum in Moscow, some of which have never been seen outside the Soviet Union.

MULTIMEDIA TOOLS

It should be clear from the preceding analysis that there is a shift in the expense of software production from programming to video editing and film production. The best multimedia programmes will be those which involve the user naturally, and there is plenty of scope for creativity in multimedia. This side of the industry needs investors, script writers and film producers as much if not more than it needs programmers.

The Archimedes has several authoring tools available which make it possible for non-programmers to create their own multimedia applications. Magpie from Longman Logotron and Bookbinder from Musberry Consultants provide simple tools which can be quickly learned. Genesis II is relatively straightforward but also provides a powerful script language for more flexible customisation. Avanti is designed to produce computer based training materials and is similar to Authorware on Macs and PCs.



A Genisis script giving the user a choice of three possible answers

Genesis and Avanti also allow access to CD ROM and LaserVision discs, which means existing materials could be repurposed. This is important since the cost of shooting video, as mentioned above, is extremely high. Using Genesis to put materials together is quick, but it is much more difficult to create the data structures which Genesis has the power to integrate. Here again, tools such as Euclid and Armadeus are helpful, but the facility to use existing data would be a lot quicker.

Hypercard on the Macintosh was the first of this type of product and benefits from a more established set of applications because of the size of the Mac user base. IBM have a program called Linkway which is similar to Genesis but it is limited and a lot more clumsy to use. RISC OS, and RISC OS 3 in particular, enable Genesis to be a more than worthy contender when compared to its rivals on other platforms, but an ARM 3 and hard disc are essential if Genesis applications are to perform to their true potential. Once again, multimedia

requires fast processing and a lot of storage. Thank goodness for the A5000.

THE WAY FORWARD

Acorn users have some major advantages over PC users in multimedia. The main one is that the Archimedes is not subject to the constraints of an old operating system, and in this respect we see increasingly that multimedia users are turning to UNIX instead of MS-DOS. RISC OS provides many of the advantages of UNIX but at far lower cost. The main problem for RISC OS is that there is no data standard for CD-ROMs and there is no straightforward means of tapping into data discs prepared for PCs and Macs. Hopefully, this will change as new standards are adopted, and Archimedes users will have the most cost-effective multimedia platform in the world.

FURTHER READING

Multimedia - Optical technologies and interactive learning. A paper by Lawrence Denholm published by CTC Trust, 15 Young Street, London W8 5EH.

Inside IT - Periodical published by John Barker, Tossa House, Main Road, Smalley, Derby DE7 6EF.

Multimedia magazine - Maclaren House, 19 Scarbrook Road, Croydon CR9 1QH.

ILP discs available from Dr.T.Margerison, British Nuclear Forum 22, Buckingham Gate, London SW1E 6LB. RU

Using RISC OS 3 (continued from page 11)

states recursively. The filer menu for the icons in its windows now also holds four extra submenu entries:

Info
Find
Settype and
Stamp

The first gives information on the file, including filetype and datestamp, while the third and fourth allow you to set these features. The *Find* option invokes a multi-tasking file finder. But this seems to have been set up in an odd way. It is only available via the Filer submenu dealing with the specific object under the pointer, and the default name for the object to be searched for is the name of the object under the pointer. Obviously you do not need to find that!

THE TASK MANAGER AND F12

The Task Manager has been Acornised and enhanced. The Task display now appears when you click Select over its icon - much more sensible than having to call up the menu each time - and the menu has been extended. It now offers a Shutdown sequence in addition to the usual Exit. This parks the drives, and then tells you that you can turn off the machine (or restart). The Shutdown option is also available using Ctrl-Shift-F12. Additionally two new features have been implemented on this reserved function key. Shift-F12 toggles the icon bar between front and back, while Ctrl-F12 puts up a Task window.

The latter option, also available from the Task Manager menu, is a good idea, but when you select it, as an unwanted side effect, Edit is automatically installed (since the Task window is supplied by Edit). Finally there is a new option on the Task Manager menu to save a Desktop Boot file. This has a special filetype (&FEA) and icon, and contains a sequence of commands to recreate the Desktop in its current state, to the extent of opening Filer windows, positioning objects on the Pinboard and installing applications on the icon bar.

This very brief look at the new Desktop must inevitably be incomplete, and the only way to get the full measure of it is to try it out for yourself. If you are not lucky enough to be in line for an A5000 you will have to wait until early summer 1992 before you can upgrade your existing Archimedes to RISC OS 3. But be assured, it will be worth waiting for.

This month's disc contains some screen dumps from the A5000 Desktop - put them on your machine and fool your friends. RU

An Icon Bar Save Box

Lee Calcraft adds a Wimp Save Routine to the Popular Icon Bar Shell Program.

The extremely useful Icon Bar Shell program published in RISC User Volume 4 Issue 7 allows you to create customised Desktop applications with a minimum of fuss. It is based around drags to the icon bar, and allows you to append code which can act on a dragged object in any way that you choose.

The additions to the program listed here implement a standard *Save as* dialogue box which can be used to save a file from the Icon Bar Shell program. The addition of this feature makes it possible to implement a much wider range of customised functions. For example, the user routine might alter the dragged file in some way before offering it for saving - it could remove REMs from a Basic program, or alter a text file so as to make it compatible with a particular DTP package or word processor. By modifying the program a little it could be made to store information about all the files dragged to it, and then make available a summary of this information in text or ArcScan format. Once the Icon Bar Shell has a Save mechanism, all these things become possible.

The code to achieve the desired effect is not, unfortunately, trivial. It is presented as two listings. The first contains new lines which must be inserted into the Icon Bar Shell program (either the original magazine listing or that from the magazine disc). To do this you will need to load the original program (the file !RunImage inside the !IbarShell directory) into Basic, or the Basic Editor, or DeskEdit. Then delete lines 890 onwards, and type in the new lines - some of which replace lines in the original.

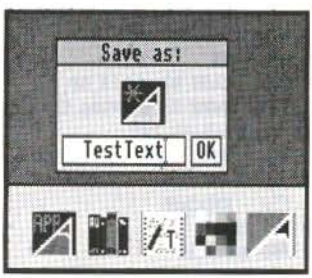
The second listing contains a new set of procedures and these may be added in the same way as above; or by typing them in separately and using the APPEND command from Basic.

When the job is complete, save the updated program with the same name as the original (!RunImage). Before running the program, you will need to increase the WimpSlot size. To do this, load the !Run file into Edit or DeskEdit, and alter the two parameters in the following line from 8K to 32K:

```
WimpSlot -min 8K -max 8K
```

CUSTOMISATION

As usual, you will need to customise the procedure PROCaction. You will need to alter lines 930 and 940 in the updated version to reflect the type of the file that you are saving. At present it is an Obey file (of type &FEB). To change it to some other type, you will need to give the name of the sprite for the new filetype (eg. "file_fff" for text etc.) in line 930, and set the variable *ftype%* to the numeric filetype in line 940.



The new Save box

You will also need to supply sensible values for the two variables *start%* and *length%*. These specify the start address in RAM from which the save will be made (set this to the address of the buffer holding the data to be saved), and the number of bytes which will be saved. As the program currently stands, just two bytes from RAM (at &9000) will be saved.

Finally you may wish to customise the default filename supplied in the Save as dialogue box. This is currently "TestText", and is set in line 2530. To set it to the name of a dragged file, you could introduce the following line in PROCaction:

```
945 $sbtext%=pathname$
```

Listing 1

```
  240 DIM block% &300,menu% 51,iblock% &
200
  502 PROCcreatesavebox
  530 DEF PROCerror
  532 SYS "Wimp_DragBox",,-1
  570 IF answer%=2 THEN SYS "Wimp_CloseD
own": END
  622 WHEN 2:SYS "Wimp_OpenWindow",,bloc
k%
  624 WHEN 3:SYS "Wimp_CloseWindow",,blo
ck%
  632 WHEN 7:PROCinitiatesave
  634 WHEN 8:PROCkey
  652 WHEN 19:SYS "OS_File",6,block%+44
  654   ERROR,255,"Data transfer failed:
 Receiver died"
  690 DEF PROCmouseclick
  692 IF block%!12=savebox% THEN
  693   IF block%!16=sbsprite% AND (bloc
k%!8 AND &50)>0 THEN
  694     PROCdragbox
  695   ELSE IF block%!16=sbokicon% AND
(block%!8 AND 5)>0 THEN PROCquicksave
  696   ENDIF
  698 ELSE
  700   CASE block%!8 OF
  710   WHEN 2:SYS"Wimp_CreateMenu",,men
u%,block%!0-68,140
  720   WHEN 4:PROCaction(TRUE,FALSE,FAL
SE,0,"")
  730   ENDCASE
  732 ENDIF
  740 ENDPROC
  782 WHEN 2:PROCdatasave
  890 DEF PROCaction(click%,dir%,appl%,f
iletype%,pathname$)
  910 IF NOT click% THEN
  920  start%=&9000:length%=2
  930  $sbs%="file_feb":REM sprite
  940  ftype%=&FEB     :REM ftype
  950  SYS "Wimp_GetPointerInfo",,block%
  960  SYS "Wimp_CreateMenu",,savebox%,!
block%-64,320
  970  SYS "Wimp_SetCaretPosition",saveb
ox%,sbtexticon%,,,-1,LEN($sbtext%)
  980 ENDIF
  990 ENDPROC
```

Listing 2

```
 2000 DEF FNcreate(vwx%,vwy%,vww%,vwh%,e
xtx%,exty%,flags%;title$)
 2010 $block%=STRING$(88,CHR$0)
 2020 block%!0=vwx%:block%!4=vwy%
 2030 block%!8=vwx%+vww%:block%!12=vwy%+
vwh%
 2040 block%!24=-1:block%!28=flags%
 2050 block%?32=7:block%?33=2
 2060 block%?34=7:block%?35=1
 2070 block%?36=3:block%?37=1
 2080 block%?38=2:block%!40=0
 2090 block%!44=-vwh%-exty%
 2100 block%!48=vww%+extx%
 2110 block%!52=0:block%!56=&3D
 2120 block%!60=3<<12:$(block%+72)=title
$
 2130 SYS "Wimp_CreateWindow",,block% TO
 handle%
 2140 =handle%
 2150 :
 2160 DEF FNicon(whandle%,ix%,iy%,iw%,ih
%,flag%,text$,d1%,d2%,d3%)
 2170 block%!0=whandle%
 2180 block%!4=ix%:block%!8=iy%
 2190 block%!12=ix%+iw%
 2200 block%!16=iy%+ih%
 2210 block%!20=flag%
 2220 IF d1%=0 THEN
 2230   $(block%+24)=text$
 2240 ELSE
 2250   block%!24=d1%:block%!28=d2%
 2260   block%!32=d3%
 2270 ENDIF
 2280 SYS "Wimp_CreateIcon",,block% TO i
handle%
 2290 =ihandle%
 2300 :
 2310 DEF PROCopenwindow(handle%)
 2320 block%!0=handle%
 2330 SYS "Wimp_GetWindowState",,block%
 2340 SYS "Wimp_OpenWindow",,block%
 2350 ENDPROC
 2360 :
 2370 DEF PROCiconstate(icon%)
 2380 block%!4=icon%
 2390 block%!8=0:block%!12=0
 2400 SYS "Wimp_SetIconState",,block%
 2410 ENDPROC
 2420 :
 2430 DEF PROCloadack
 2440 block%!12=block%!8
 2450 block%!16=4
 2460 SYS "Wimp_SendMessage",17,block%,b
lock%!4
 2470 ENDPROC
 2480 :
 2490 DEF PROCcreatesavebox
```

```
 2500 savebox%=FNcreate(0,0,264,164,0,0,
&84030012,"Save as:")
 2510 DIM sbs% &FF:$sbs%="file_fff"
 2520 sbsprite%=FNicon(savebox%,100,-92,
68,68,&6102,"",sbs%,+1,&FF)
 2530 DIM sbtext% &FF:$sbtext%="TestText
"
 2540 DIM sbval% 10:$sbval%="A~ "
 2550 sbtexticon%=FNicon(savebox%,8,-156
,192,48,&700F13D,"",sbtext%,sbval%,&FF)
 2560 sbokicon%=FNicon(savebox%,208,-156
,48,48,&C701903D,"OK",0,0,0)
 2570 ENDPROC
 2580 :
 2590 DEF PROCdragbox
 2600 !block%=savebox%
 2610 SYS "Wimp_GetWindowState",,block%
 2620 ox%=block%!4-block%!20
 2630 oy%=block%!16-block%!24
 2640 block%!4=sbsprite%
 2650 SYS "Wimp_GetIconState",,block%
 2660 !block%=savebox%
 2670 block%!4=5
 2680 block%!8=ox%+block%!8
 2690 block%!12=oy%+block%!12
 2700 block%!16=ox%+block%!16
 2710 block%!20=oy%+block%!20
 2720 block%!24=0:block%!28=0
 2730 block%!32=&7FFFFFFF
 2740 block%!36=&7FFFFFFF
 2750 SYS "Wimp_DragBox",,block%
 2760 ENDPROC
 2770 :
 2780 DEF PROCquicksave
 2790 IF INSTR($sbtext%,".") THEN
 2800   PROCsaveit($sbtext%,start%,lengt
h%)
 2810 ELSE
 2820   !block%=ERR
 2830   $(block%+4)="To save, drag the i
con to a directory viewer"
 2840   SYS "Wimp_ReportError",block%,1,
"Test task"
 2850 ENDIF
 2860 ENDPROC
 2870 :
 2880 DEF PROCsaveit(name$,start%,length
%)
 2890 SYS "OS_File",10,name$,ftype%,,sta
rt%,start%+length%
 2900 !block%=savebox%
 2910 SYS "Wimp_CloseWindow",,block%
 2920 SYS "Wimp_CreateMenu",,-1
 2930 ENDPROC
 2940 :
 2950 DEF PROCkey
 2960 CASE block%!24 OF
 2970 WHEN 13:IF !block%=savebox% THEN P
ROCquicksave
 2980 WHEN 27:!block%=savebox%:SYS "Wimp
_CloseWindow",,block%
 2990 OTHERWISE SYS "Wimp_ProcessKey",bl
ock%!24
 3000 ENDCASE
 3010 ENDPROC
 3020 :
 3030 DEF PROCinitiatesave
 3040 REM send datasave message to dest
task
 3050 SYS "Wimp_GetPointerInfo",,block%
 3060 block%!20=block%!12
 3070 block%!24=block%!16
 3080 block%!28=block%!0
 3090 block%!32=block%!4
 3100 block%!36=length%
 3110 block%!0=64:block%!12=0
 3120 block%!16=1:block%!40=ftype%
 3130 $(block%+44)=FNgetleaf($sbtext%)
 3140 REM send DataSave message
 3150 SYS "Wimp_SendMessage",17,block%,b
lock%!20,block%!24
 3160 ENDPROC
 3170 :
 3180 DEF FNgetleaf(name$)
 3190 WHILE INSTR(name$,".")
 3200   name$=MID$(name$,INSTR(name$,"."
)+1)
 3210 ENDWHILE
 3220 =name$+CHR$(0)
 3230 :
 3240 DEF PROCdatasave
 3250 fullname$=""
 3260 a%=0
 3270 b%=block%?(44+a%)
 3280 WHILE b%<>0
 3290   fullname$+=CHR$(b%)
 3300   a%+=1
 3310   b%=block%?(44+a%)
 3320 ENDWHILE
 3330 PROCsaveit(fullname$,start%,length
%)
 3340 IF block%!36>-1 THEN $sbtext%=full
name$
 3350 block%!12=block%!8
 3360 block%!16=3:!block%=256
 3370 SYS "Wimp_SendMessage",18,block%,b
lock%!20,block%!24
 3380 ENDPROC
```

RU

15 September 1991
Dear Mrs Cassady
I would like to thank you and your
move to our new premises. As
ahead of schedule and the disrupt
to an absolute minimum. If onl
as simple!

PIPEDREAM 4

Imagine a flexible word processor in which you can use fonts and pictures to give stunning presentation to your letters and reports. And a 93,000 word spelling checker and user dictionaries for letter-perfect writing.

Imagine the most powerful spreadsheet package on the Archimedes. Background recalculation so you carry on working while it computes. 160 built-in functions, plus a programming language for your own custom functions. Arrays within slots for easy manipulation of structured data.

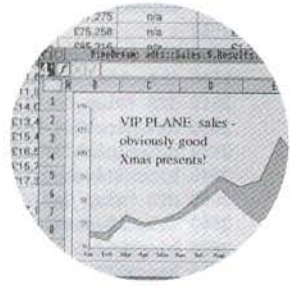
Imagine dynamic charts straight from your data. Multiple scales to compare trends. Personalised Penguin Graphics with bars filled by your own draw files to dazzle your friends and colleagues.

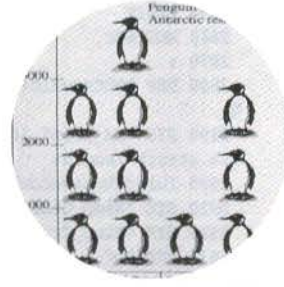
Imagine a fast and compact database package with full sorting, searching and selection criteria. With links straight to the word processor for printing mailshots and labels.

Imagine user-friendly features such as configurable menus, template files to start new documents from, and automatic fitting of column widths to the data.

PipeDream 4
the works
Free your imagination.

RRP £196+VAT. Call for education prices and site licences. PipeDream 4 is ideal for any Archimedes, A3000 or A5000 with 2MB RAM or more.





COLTON software

Coltonsoft Limited
2 Signet Court
Swanns Road
Cambridge
CB5 8LA
Tel: (0223) 311881
Fax: (0223) 312010

For a free brochure, complete and return this coupon.

Name _____

Address _____

_____

_____

_____ Postcode _____

PipeDream 4

An enthusiastic user, Dan Everard assesses PipeDream 4, the latest incarnation of this combined word processor and spreadsheet from Colton Software.

Colton Software has come out with a new version of PipeDream. It comes in a box containing two discs, the program itself on one disc, and examples and useful bits and pieces on the other. There are two manuals, a good tutorial book to get you going, and a comprehensive reference guide for when you start to spread your wings. There is also a function key label, a registration card, and even a rather smart key ring for the first thousand users. The version I used for this review is a pre-release copy with a few features not yet working. However, Colton expects the fully working system to be available during November.

WORD PROCESSING

For those of you who know earlier versions, this one will be highly familiar, but with a screen layout that belongs on an Archimedes rather than borrowed from a BBC B. If you've not used PipeDream before you may find the screen a little odd for what seems to be a word processor, since it looks like a spreadsheet, but do not fret, it processes words rather well and will perform all sorts of other tricks into the bargain.

The one word processing function that PipeDream has never been able to perform is to mark a block at random in order to change it in some way, though there are ways around this. This is because PipeDream works with cells of information; this review was written with one cell 72 characters long to a line, and saved to disc as ASCII code to make transfer to DTP as simple as possible.

When working with an outline font, you will find that PipeDream 4 now spaces lines correctly for the font size you are using as the "Global font". Like a DTP package, you can set your line spacing independently of the font size (or automatically to 120% of it). If you set a local font for part of a document, it is shown at the correct size if it is smaller than the global font, or is compressed vertically to fit the line spacing if it is larger. Formatting works correctly, but you have to adjust the number of lines to the page yourself to allow for the bigger font. All fonts print properly at the size selected, but the program is not truly WYSIWYG. However, I do not personally find this to be a problem.

PRINTING

You get used to working with applications which are fully RISC OS compliant, so it comes as no surprise that PipeDream 4 interfaces well with the normal Acorn printer drivers, and has a built in driver for ASCII printing which can be configured for your own printer. If the printer you use doesn't have a good handbook, it may be a rather daunting task to set all the codes needed, but four drivers are provided on the program disc to get you going (Epson compatible, HPjet, BJ10 and Daisy Wheel).

The PipeDream drivers are written in ASCII format, in such a way as to make writing your own relatively easy by modifying the nearest one to your needs, and there are notes in the file to tell you what the lines do. Save it under your own file name in the !PipeDream.PDrivers directory, and when you call the printer drivers your file will be on the list. One small niggle here: the print window used when outputting to the printer doesn't tell you which driver you have chosen, so if you use different PipeDream drivers for different jobs you can find yourself wasting paper. However, when you have set the printer driver for a document, that information is saved in its file, so you do not need to remember which driver it needs.

FUNCTION KEYS

The next obvious change to dedicated PipeDream users is a minimalist function key strip which has the SAVE function on F3 in common with a lot of other software, and as you get further into using PipeDream 4 you will find more and more things that conform to the Acorn preferred guidelines.

For those who wish to keep the old function key definitions, Colton provides a command file on the program disc which can be copied into the main directory and then renamed to get PipeDream to start up automatically with the old key functions (a reversible process, since they also provide a backup file of the new ones as well!).

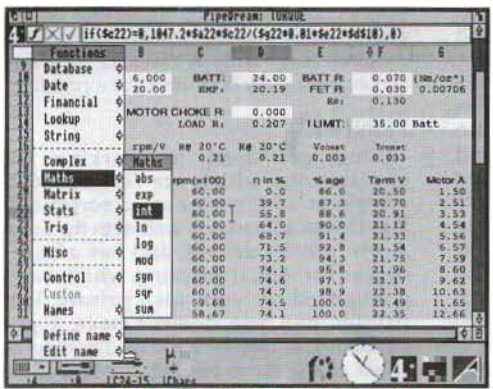


Figure 1. The functions menu in use with a spreadsheet

I felt very uncomfortable with the new set until I had become accustomed to the power of PipeDream 4, but persevered and quickly found that the more flexible use of the pointer and menus made my fears unfounded. Since the program has more functions than its predecessor, you may find that you want different function keys anyhow, and reading the command file (or better still the handbook) shows how to write your own file for your own set up. Name it correctly and file it in the right place, and it will automatically load itself each time you start the program.

Virtually the whole keyboard is reprogrammable, and can be treated in the same way; if you want to park a useful bit of text or a string of commands on the '\' key for quick access, for example, the handbook tells you how.

MOUSE CONTROL

The mouse and pointer are used more than in earlier versions of PipeDream. It is possible to change column widths and right margins immediately by dragging their indicators on the borders. While you are doing this, the pointer changes shape and a neat box in the top left of the border changes to a number to tell you that you have grabbed what you wanted, and what its current setting is. This means that controlling the layout of your page is much more visual, and easier to get right if you are working with lots of columns. A new command will also adjust the column width automatically on demand so that it is as narrow as possible, but shows the entirety of all entries in its slots - very useful on spreadsheets where my results, at least, are frequently one digit too big for the column width I have set previously.

The menu system is as you would expect, with large and small menus available, and Colton has selected the contents of the small menus to be generally the most used commands. The icon bar menu has been made much more useful: all the general commands for controlling PipeDream (as opposed to specific commands for the document you are working on) are now on a menu accessed by clicking Menu on the icon, and these can be saved easily as "Choices".

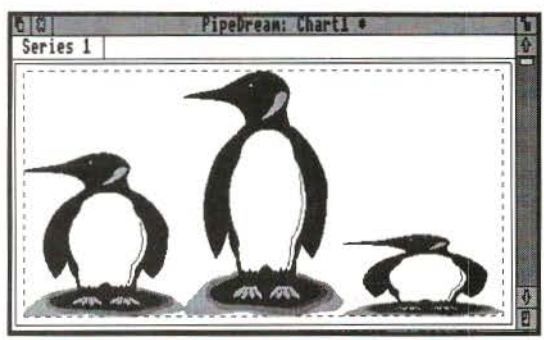


Figure 2. Penguin graphics showing scaled Draw images

TEMPLATES

You can also save templates, and reload them for new documents: these are blank page outlines, so if you normally lay out a letter in one way, and a report in another, PipeDream can start a new document with your choice of layout, and no problems with loading a blank document and forgetting to rename it before saving. A template contains

all the page size, header and footer information (up to three lines of each of these), fonts used and their sizes, and all the information about justification, wrapping, etc., even the behaviour of the Return key for the document. You can go so far as to include the file name automatically in the footer of the template, and each document will identify itself on printing.

SCREEN DISPLAY

There is a new feature which enables you to add and delete commands to the small menus, so if you normally access commands from a menu, the system can be tuned to your requirements. I find this system awkward to use since you are working blind and cannot see the result of an addition or deletion immediately, but have to click up a menu to see if you did what you wanted. However, for use in schools where a teacher may want pupils to use only a specific set of commands, or with temporary office staff who might be unfamiliar with PipeDream, it offers a usable way of customising the menus.

SPREADSHEETS

The space just below the title bar has changed dramatically. The window for entering formulae in slots is much clearer, and clicking on a nearby PipeDream 4 icon opens a much bigger window for those, like me, who use very long formulae. Clicking on a button marked with a curly 'f' opens menus containing 160 functions (see figure 1). These are just the ones PipeDream normally offers, but there is now a built-in programming language which enables you to define your own functions as well, and these will dutifully add themselves to the list if their source file is loaded.

The functions are entered into the formula slot from their menu, when selected with the mouse, complete with all the punctuation they need. This helps a great deal with getting the right number of bracket closures into a complex expression, or just as a memory jogger for the syntax a function needs ... let's face it, with 160 functions you may need help! If you prefer to work with the pointer, there are a pair of buttons, a tick and a cross, which duplicate the Return and Escape keys to confirm or abort a formula entry without having to go back to the keyboard.

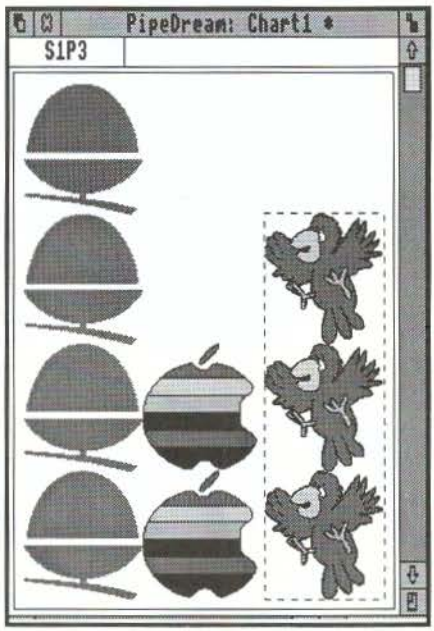


Figure 3. Multiple use of Draw images in graphs

IN-BUILT GRAPHICS

PipeDream 4 now has another trick up its sleeve, although on the pre-release version this was not fully working. Once you have produced the spreadsheet of your dreams, the results can be entered into the graphics section of the program called "Charts", and a diagram will be produced in one of four formats (pie, line, bar or scattergram) each of which has several styles (a feature referred to as Penguin Graphics by Colton Software). Combined with the mathematical functions available within PipeDream this give an enormous library of graph types. The diagram can be exported in Draw format, and included in a PipeDream document, since PipeDream handles Draw files and sprites, or it may be printed directly if required. Draw files can also be used in bar charts for instance, and Colton has a nice example using a drawing of a penguin of varying height to illustrate the frequency of sightings of these charming birds in various places (see figure 2).

In common with previous versions of the program, a Draw file or a sprite can be incor-

continued on page 53

PDSview

PDS

Planetary Data System

EXPLORE NEW WORLDS

General purpose image processor
Featuring the Planetary Data System

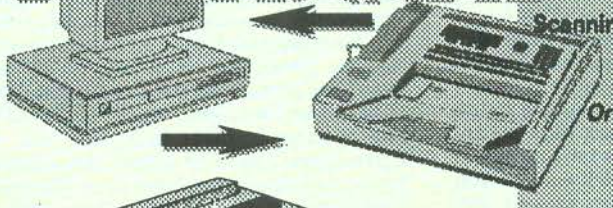
£99.50 ex VAT

Thousands of spacecraft images now available from us on CD-ROM including the ENTIRE Voyager database!

!Orrery

Simulation of the Solar System **£95.00** ex VAT

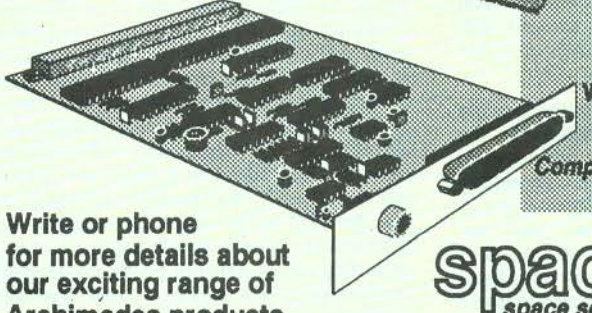
FaxScan



Scanning interface for Amstrad FAX

£99.50 ex VAT

Or half price with Fax machine.



Weather Satellite Decoding and Reception Equipment

Complete stations from **£575** ex VAT

Write or phone for more details about our exciting range of Archimedes products

spacetech
space science resources

21 West Wools, Portland, Dorset DT5 2EA. U.K. Tel 0305 822753 Fax. 0305 860483

The Secret Life of Templates

With some template magic, Lee Calcraft liberates Filer windows, unfreezes the icon bar, and develops a simple routine for checking the contents of template files.

As you may know, the Template Editor, FormEd, can be used for designing windows and dialogue boxes for use with Wimp programs. It saves its data as a template file, usually named *Templates*, which contains all the information needed by the Wimp for creating one or more windows, together with any icons contained in them.

You can of course write programs which create their windows and icons from scratch using enormous data blocks, but this is hard work involving a certain amount of trial and error when it comes to the layout of each window. Of course, most Wimp programs published in RISC User adopt this latter approach, because Wimp template data is not easily conveyed via the printed word.

MODIFYING PROPRIETARY TEMPLATES

It can sometimes be useful to modify the templates of proprietary software packages so as to customise them for your own use. To do this you will need a copy of Acorn's Template Editor, FormEd (supplied on the Volume 4 Issue 3 disc, and also on the Wimp Programmer's Toolkit). If you do not have access to a copy, you may want to skip the next two sections.

The most useful changes that you can make to a window are probably its initial size and shape, its initial position, and whether it can be moved beyond the edges of the screen or not (unfortunately you can't alter this for Edit, though you can for both Paint and for Filer windows - see later for how to do it).

As an example, suppose you wish to alter the size and initial position of Edit's text windows. You would proceed by opening Edit's application directory (by double-clicking on Edit's icon in a directory viewer with the Shift key held down), and either double-clicking on the file, *Templates* (assuming that FormEd had been 'seen' by the Filer), or dragging the file to FormEd's icon on the icon bar.

If you are using version 1.24 of FormEd or later, then just double-click on the miniature icon with the identifier *text*; otherwise, you will need to find the text window amongst the stack of windows which appear on screen. It is the one with the cross-hatchings in it. Now simply move it to the position on screen where you want it to appear, and optionally resize it. Now save the edited template file - but as a precaution you should keep a copy of the original. Now when you run Edit, and open a new window, it will have the required initial size and position.

ALTERING RISC OS TEMPLATES

Even the Wimp and the Filer use templates for their screen windows, and although these are stored in ROM, it is an easy matter to use an edited copy of them to implement quite useful features. For example, you can allow Filer windows to move beyond the edges of the screen, and permit windows to go behind the icon bar. Both these features come as standard with RISC OS 3.

The first is very useful in helping to unclutter the Desktop, while the second allows you to open a large text window on screen, and then click on the Back icon to send it behind all other windows. Normally, it would remain in front of the icon bar - obscuring the most important part of the Desktop - but with an icon bar which can have objects behind it, any window sent to the back will now go behind it.

This is particularly useful when using DeskEdit, where the current text window can be flipped from the front to the back of the stack, and back again, using Ctrl-Enter, and Ctrl-Shift-Enter (currently in use as I type this article).

```
*Cat DeskFs:
Templates.Filer
Templates.NetFiler
Templates.Palette
Templates.Switcher
Templates.Wimp
```

Figure 1. Cataloguing the DeskFS filing system

The templates for RISC OS 2 are held in the so-called Desk filing system. You can check the contents of this by pressing F12, and typing:

```
Cat DeskFS:
```

See Figure 1. The Wimp templates are in the file:

```
DeskFS:Templates.Wimp
```

while the Filer templates are in:

```
DeskFS:Templates.Filer
```

To load the first of these into FormEd, type something like the following at the command line:

```
adfs::0.$.!FormEd DeskFS:Templates.Wimp
```

The first part of the command should give the full path to your copy of FormEd.

Once FormEd has loaded, you should be taken back to the Desktop with FormEd on the icon bar, and with the Wimp's templates loaded in. It is the *iconbar* template which needs to be edited. Click Menu over this template, and move across the *Window flags* entry. Simply un-tick the *Back* entry, and resave the edited file. You should retain the name *Wimp*, but save the file to a newly created directory called *Templates*, ideally situated in the root directory of your work disc.

If you are going to edit the Filer's templates, then repeat the process with DeskFS:Templates.Filer, launching FormEd from the command line again. This time edit the template named *directory*, again moving the pointer across the *Window flags* entry in the menu. This time, click on *No bounds*, and again save the file to the newly created *Templates* directory of your work disc.

To make these new templates come into effect, you simply need to set a system variable to tell RISC OS to check your new templates location before resorting to the DeskFS filing system in its search for suitable templates. The easiest way to do this is to insert the following line, or similar, into your Boot file:

```
*set Wimp$Path adfs::WorkDisc.$.,DeskFS:
```

This nominates the root directory of the ADFS disc named *WorkDisc*. Now reboot your machine, and enjoy the new features.

Figure 2. Using unrestricted Filer windows, and an unfrozen icon bar

READING TEMPLATE FILES

Because template files contain sets of window and icon data laid out in an orderly fashion, it is possible to write short routines to interrogate them and display the results. For example, the program in Listing 1 loads in a template file, and displays the number of windows which it contains, and the name of the identifier of each. It assumes that the template file is called *Templates* (this is the approved name for application templates), and that it is less than 10K in length (most templates are only a few hundred bytes each).

To make use of the program, type it in, and save it away for safe keeping. Then run it by double-clicking on its icon in a directory viewer. It will ask for the name of the directory containing the template file

(assumed to have the name *Templates*). You should supply the full pathname - for example, if you type:

adfs::0.!Edit

It will examine the template file in the Edit application on the disc in drive zero, and so on. It will generate a display similar to that shown in Figure 3.

```
Full pathname of directory
for loading Templates file
e.g. adfs::0.$.!Edit
?adfs::$.!MyApp1

Template identifiers:
 text
 Filename
 ProgInfo
Total=          3
```

Figure 3. Using the program in Listing 1

To keep things simple, the program has not been made multi-tasking, but it would be a simple matter to include it as a procedure in the Iconbar Shell program (RISC User Volume 4 Issue 7) in such a way that dragging a template file to its icon would display an analysis of the file.

EXTRACTING MORE INFORMATION

The program in Listing 2 works in a similar way to that in the first listing, except that, as well as the name of each identifier, it also displays the number of icons used in each window, together with the title of each window if the title is not indirected, displaying the message "<indirected>" otherwise. For this to work, the program needs to check the window flags of each window to test bit 8, which specifies whether the window title is indirected or not (obtaining the title itself from the 12 bytes at an offset of 72 bytes into each block of window data) - and as you can see, the mechanics of extracting the data already begins to obscure the way in which the program works.

Both programs are easily modified to display other facts, though to do this you obviously need to know the structure of a template file. Essentially it consists of a 16 byte header (which is not used unless Outline fonts are employed). This is followed by a

```
Full pathname of directory
for loading Templates file
e.g. adfs::0.$.!Edit
?adfs::$.!MyApp2

            ** TEMPLATE INFO **

Identifier      Window Title     Icons
 search         Search             5
 text           <indirected>       0
 xfer_send      Save as:           4
 Filename       File               3
 ProgInfo       <indirected>       9
Total windows=5
```

Figure 4. Using the Template info display program (listing 2)

number of 24-byte blocks - one for each window contained in the file. The content of each block is given in Table 1. A zero word follows the end of the last of these blocks.

Offset	Size	Meaning
n+0	4	file offset of data for this entry
n+4	4	size of data for this entry
n+8	4	entry type (1=window)
n+12	12	identifier (CR-terminated if less than 12 chars)

Table 1. Structure of 24 byte window block

Next there follows data for each window. This consists of 88 bytes of window definition (exactly as used in "Wimp_CreateWindow"), followed by 32 bytes for each icon definition, followed by any indirected icon data. If Outline fonts are used, a block of font data completes the file.

If you want to experiment further, full details are to be found in the PRM. The structure of a window block is given on page 1176, and of an icon block on page 1180. The structure of template files is summarised on page 1789.

This month's magazine disc contains edited Wimp and Filer Templates files which implement boundless Filer windows, and un-frozen icon bars - as well as an enhanced multi-tasking template information display program.

The Secret Life of Templates

Listing 1

```
   10 REM >TPlateTst1
   20 REM by Lee Calcraft
   30 :
   40 DIM buff% &2800
   50 PRINT "Full pathname of directory"
   60 PRINT "for loading Templates file"
   70 PRINT "e.g. adfs::0.$.!Edit"
   80 INPUT pathname$
   90 OSCLI ("LOAD "+pathname$+".Templat
es "+STR$~buff%)
  100 index%=buff%+16
  110 n%=0
  120 PRINT '"Template identifiers:"
  130 REPEAT
  140   PRINT " ";$(index%+12+n%)
  150   n%+=24
  160 UNTIL index%!n%=0
  170 PRINT"Total="n%/24
```

Listing 2

```
   10 REM >TPlateTst2
   20 REM by Lee Calcraft
   30 :
   40 DIM buff% &2800
   50 MODE 0
   60 PRINT "Full pathname of directory"
   70 PRINT "for loading Templates file"
   80 PRINT "e.g. adfs::0.$.!Edit"
   90 INPUT pathname$
  100 OSCLI ("LOAD "+pathname$+".Templat
es "+STR$~buff%)
  110 index%=buff%+16
  120 n%=0
  130 PRINT 'TAB(12) "** TEMPLATE INFO *
*"'
  140 PRINT "Identifier      Window Titl
e     Icons"
  150 REPEAT
  160   PRINT " ";$(index%+12+n%) TAB(16
);
  170   data_offset%=index%!n%
  180   IF buff%!(data_offset%+56) AND 2
^8 THEN
  190     PRINT "<indirected>";
  200   ELSE
  210     i%=0
  220     REPEAT
  230       c%=buff%?(data_offset%+72+i%
)
  240       IF c%>31 THEN PRINT CHR$c%;
  250       i%+=1
  260     UNTIL c%<32 OR i%>11
  270   ENDIF
  280   PRINT TAB(35);buff%!(data_offset
%+84)
  290   n%+=24
  300 UNTIL index%!n%=0
  310 PRINT"Total windows=";n%/24
```

RU

"FIRST"

ADVANCED STATISTICAL SYSTEM

The ESTABLISHED Statistics Package for the Acorn Archimedes
A powerful and practical tool for Research, Medicine, Industry, Business and Teaching

New release features extensive, instant, context-related on-line HELP

Integrated, interactive, robust, fast, accurate, modular. Designed to facilitate data critique.
Versatile data entry with CSV interfaces. CSV full data management including extensive transforms.
Handles missing values and data subsets. Line graphs, scatterplots, regression and function plots.
Univariate statistics. Paired and unpaired t tests. Chisquare tests. Nonparametric methods.
Unrivalled REGRESSION facilities eg weighted, through the origin, standardised. Full statistical information.
Residuals, fitted and predicted values. Much more. Correlations. ANOVA. Contour plots of regressions.
Regression DIAGNOSTICS - VIFs, influential points etc. Automatic warnings.
ROBUST regression - many influence functions. Powerful NONLINEAR least squares
Time Series, eg moving averages, exponential smoothing, causal models.
One - Two - and Three-way ANOVA subsystems. Distributions generator. Histograms. Linear Calibration.
Cluster analysis. Many other powerful analytical and descriptive features. Full utilities.

Price still £150 (Archimedes version). Large EDUCATIONAL DISCOUNTS. RU subscriber discount. No VAT.
There's far too much to describe here. Get full information now from:

Serious Statistical Software, Lynwood, Benty Heath Lane, Willaston, South Wirral L64 1SD. Tel. 051 327 4268.

ARCade

A roundup of the latest games for the Archimedes and A3000/A5000 by Peter Rochford

Welcome to another edition of ARCade featuring a timely roundup of what's new on the Arc games scene, ready for the Christmas season that is almost upon us.

THE REAL MCCOY

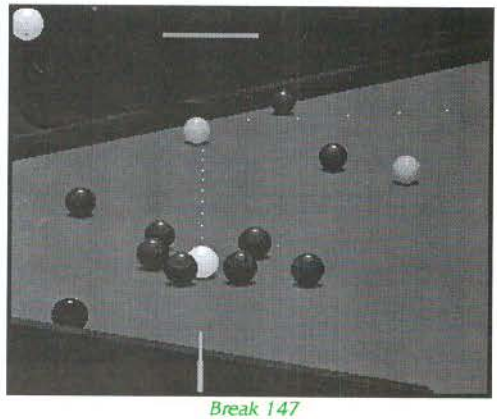
As always, 4th Dimension have a good selection of new titles on offer. A new compilation called the *Real McCoy II* gives you four games at the more than reasonable price of £29.95. What's on offer is four of 4th D's previous releases, *Apocalypse*, a frantic space shoot-'em-up, the golf game *Holed Out*, the *Olympics* sports simulation and the rather odd titled landscape game, *Inertia*.

We've reviewed all of these before in ARCade, and they were all well-received. In consequence, I would say that this really is an excellent package and offers a rather better collection than the first Real McCoy compilation. The only flaw, perhaps, is that Holed Out has consistently been a big seller, and is probably already on the shelf of many an Arc owner.

BREAK 147

Still with the 4th Dimension, the long-awaited *Break 147* has finally arrived, and as a bonus, also includes *Superpool*. These two simulations together in one package represent excellent value for money. Both games feature a 3D table that can be rotated, and hence 'walked around' to choose and position your shot. The on-screen cue is mouse driven, and you actually move the mouse forward to drive the cue at the chosen ball. You can play against the computer or against another player, and even take part in a tournament. There is also a practice table where you can move the balls around to set up a particular shot. Loads of options are available, too numerous to mention, and these ensure that the game will maintain its interest for quite a long time.

Graphics in both games are excellent, featuring a mode 13 screen with 256 colours. Scrolling and ball movement is smooth and relatively flicker free. Control of play is straightforward and mostly via the mouse, so getting the hang of the game is easy and quick. This should appeal to all ages. To add to this, the sound effects are well implemented and feature a host of sampled sounds and speech.



Break 147

I can't recommend this one highly enough. If you are into snooker or pool then go for it. You'll be hard put to find a simulation as good as this one on any machine.

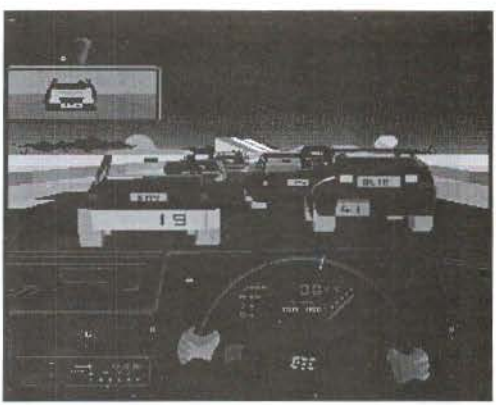
BOOGIE BUGGY

Next, again from 4th Dimension, we have *Boogie Buggy*. This is a hard game to categorise as it is a combination, I suppose, of a platform type game and a horizontal/vertical scrolling arcade adventure. If you remember Labyrinth from Acornsoft on the Beeb, then you are pretty close to knowing what this game entails.

The story goes that you wander around the infamous Dodge City, where the Evil

Monster Lord has taken control and is using his power to turn good into evil. Your task is to stop him by destroying his evil creations and rescue the city. This you do by piloting your buggy around, avoiding the hazards and nasties while collecting various items to help you. Pretty standard stuff all this, but nonetheless great fun.

I liked this one enormously, and I think that it will have wide appeal. In particular, the younger members of the family will take to it as it has a simple method of play and some delightful characters excellently animated - highly recommended.



Saloon Cars

SALOON CARS

The last game from 4th Dimension is *Saloon Cars*. You'll remember that I was not too impressed with their recent car racing game, *Powerband*. Well, they have redeemed themselves with the release of this one I am pleased to report. Not since Revs on the good old Beeb have I enjoyed a car driving simulation so much.

First let me say before I go any further, that this game is NOT simple. Initially, the controls of the car are difficult to master, and much time is spent trying to disentangle the front of the car from the trackside barriers! Perseverance does pay off however, and once you get a feel for it, the game can be really enjoyed.

Graphics are first class, providing a cockpit view of the track. The controls of the car are animated for extra realism and both the rear view and wing mirrors work as in a real car. Trackside detail is excellent and varied, with good scrolling and no flicker. Sound is minimal but well done, with a realistic engine sound that varies with throttle setting and does not become tedious.

Saloon Cars is a great game as far as I am concerned, providing a good challenge in a very realistic and entertaining simulation - highly recommended. Vroom!

BOXING MANAGER

Krisalis has done well in the past with their Amiga conversions for the Arc such as *Man Utd* and *Professor Mariarti*. New from them is *Boxing Manager*. Here you are in control of up to 5 boxers, and you must use your skills as a manager against the computer which controls 17 managers and 100 boxers. Daunting huh? You bet!

In practice, what you have here is another sports management simulation. You either love 'em or hate 'em. Personally, they leave me cold. This one is good of its genre, with some rather nice animated sequences to liven it all up. The manager's secretary is certainly worth watching!

But at the end of the day I kept longing for some action. You don't actually get to see any boxing, only two guys commentating on a match from below the ring, with the words displayed in bubbles a la cartoon. Yawn. Sorry, not for me.

LEMMINGS

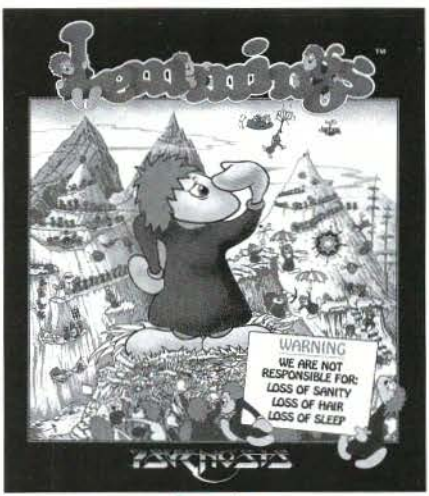
Now and again a computer game comes along that is so different and so addictive, that it almost instantly achieves "classic" status amongst games players. Such is the case with *Lemmings* from Psygnosis. Already a massive hit on the Amiga and PC, Krisalis has licenced and converted it for the Arc in what is sure to prove a financially sound move.

To describe Lemmings is a daunting task, as it is so different from other games in

the past. Essentially it is a platform and levels game involving logic to solve a multitude of life and death situations. You have to save the lives of dozens of little men who have Lemming-like suicidal tendencies. Left to their own devices, these little chaps are oblivious to all danger and wander around hell bent on ending it all.

Using your skill and by utilising the options to change the little men into climbers, diggers and blockers, you have to construct a safe path for the Lemmings to escape without too much loss of life.

There are 120 screens to the game with three levels of difficulty, so there is good longevity to the game, and it is accessible to those of varying games playing ability. Graphics are good but not remarkable, but then that is made up for by the sheer addictiveness of the game.



Lemmings

And addictiveness is what Lemmings is all about. The cover of the game box states "we accept no responsibility for loss of sleep, loss of hair and loss of sanity" - their disclaimer is well-founded! Unreservedly recommended.

WONDERLAND

You've heard me recommend certain adventures in this column before from the Magnetic Scrolls software house. Well, I'm going to suggest that you add another to your collection. In fact, if you don't have an adventure game in your collection and you think they are not for you, then think again and go out and buy *Wonderland*.

This is the latest from Magnetic Scrolls, and as you may have guessed is based on Lewis Carroll's ever popular story of Alice and the Mad Hatter.

What makes me recommend this game to non-adventurers is the way that the game is presented. Many people don't like adventures because there is too much typing, sometimes no pretty pictures and no animation, and because it requires map drawing and so on. Well, *Wonderland* gets round all of this by using a custom windowing environment, and it is all mouse driven. There is no need to type anything at all really. You point to the compass in one window to move. Select objects in another window to pick up or drop using the mouse, and point to things in a picture which you want to examine. Not only that, but the computer plots your course on a map to show you exactly where you are and where you've been.

The whole concept is brilliant, and my only criticism is that it would have been nice to use the Arc's own windowing environment, but then of course this is a PC/Amiga ported game. That aside, I have no complaints. This surely is the way forward for all future adventures to be done, and it makes the whole thing so much more enjoyable.

But what of the game itself? Well, it is up to the usual standard, and full of nasty puzzles and tricks. Haven't got too far yet but I am totally addicted already. I must say that the graphics are some of the best yet, and the animated sequences are superb. Wait until you see the inside of the music room!

As aforesaid, if you have been put off adventures before, try this one. It will change your views I am sure. Fun to play, and with a delightful story that will tease and frustrate. Very highly recommended.

42M Removable Drives – £499 + VAT

If you are looking for a hard drive for your Archimedes or A3000, why not consider using a MicroNet MR45 removable hard drive ?...

- **Fast** – The average access time is 20 milliseconds, so these are FAST devices. When used with an Oak SCSI card, the file transfer rate is the same as a standard 45M hard drive.
- **Reliable** – The technology of these drives has been proven by use in huge quantities on the Apple Macintosh computers.
- **Robust** – The discs, when not in the drive, are extremely robust. We (deliberately!) threw one half-way across the office, it dropped on the floor and rolled over a couple of times. We then verified it and found that it did not have a single error on it!
- **Flexible** – The medium is removable, so you can use different discs for different areas of work, each with its own boot file – one for DTP, one for games etc.
- **Physically secure** – The medium is removable, so you can take out the disc and lock it up in a safe place.
- **Secure data** – The discs can be write protected, like floppy discs, to protect the data.
- **Cheap** – The price of the drive, including a single 42M disc, is just £499. (£590 inc VAT & carriage) Extra 42M discs are £75 each inc VAT. (SCSI podules are available from £170.)

Public Domain Software

Norwich Computer Services has a range of over 50 discs of Archimedes public domain software from various sources. Many of the discs contain several quite substantial applications for as little as £3.50 per disc. Some of the more popular applications are...

- **!PCDir** – A desktop utility that allows the transfer of files between MS-DOS discs and Archimedes discs. (One of many programs on Careware Nº7 – £7. The aim of Careware discs is to raise money for charity. For each disc, £6 is sent direct to charity.)
- **!Translator** – This application allows you to translate between various image file formats – sprite, GIF, TIFF. (Careware Nº13, £7.00, which also has other graphics applications.)
- **!Draw+** is an updated version of !Draw with many extra features including keyboard short-cuts. (Also on Careware Nº 13, £7.00.)
- **Keystrip printer** – Creates !Draw keystrip from an !Edit file of the text. (Shareware Nº32, £3.50 – also has a lot of other DTP stuff on it.)
- **Golf** – an excellent implementation with full sound & graphics. (Shareware Nº41, £3.50)
- **DOS filing system and DFS reader/writer** – These are available on Shareware Nº31, £3.50, which also has a 'C' editor and various other utilities.

Ring, write or fax us if you want a full list of our PD software.

Norwich Computer Services

96a Vauxhall Street, Norwich NR2 2SD. (0603–766592 / Fax 764011)

ZELANITES

If you are an ex-Beeb owner, you will perhaps remember a company called Micropower that produced masses of good software for the BBC micro way back in the early to mid-eighties. Well they are back again and this time producing arcade games for the Arc.

Zelanites

Supplied on one disc but packaged in a box that could probably house two videotapes, *Zelanites* is the first true Arc games release from Micropower. To all intents and purposes, this is Space Invaders by another name! But, don't dismiss it just yet. True, it starts off just like a fairly regular Space Invaders game with enhancements, but as it progresses it develops into a shoot-'em-up par excellence, with features in it from a 101 other shoot-'em-ups. It's fast, furious and it's noisy, but it's fun if death and destruction games are your scene. Added to that it is slick and polished with some excellent graphics and sound effects to match.

As the sleeve notes claim, the game is very playable with a sensible degree of progressive difficulty. It is also highly addictive I found. This gets my vote as one of the best shoot-'em-ups on the Arc and comes highly recommended.

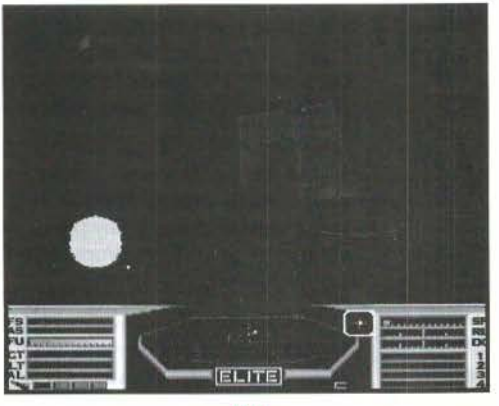
ELITE

Finally, too late to include a detailed review, is the release of the long-promised Archimedes version of the most successful computer game of all time, *Elite*. Not from Acornsoft however, but strangely from Hybrid more known for their music add-ons for the Beeb.

Improved graphics, improved sound and better playability are all features offered by Archimedes Elite. Add to that a multitude of new missions and new adversaries and you have just a few of the many good reasons to make sure that this game ends up in your Christmas stocking.

Unfortunately, though, Elite is a trifle pricey at £39.95, and does not now include the original novella either. It does, however, include totally re-written documentation.

Elite was a big hit on the Beeb and on just about every other computer around. Many who moved on to the Arc from a Beeb probably still suffer from Elite withdrawal symptoms! This will surely be one of the most welcome additions to the ever-growing range of quality games for the Arc. Like Lemmings, Elite gets an unreserved recommendation and stands alongside it as the other most significant games release yet for the Arc.



Elite

That's all for this month and let me wish you all a Lemming Christmas and and an Elite New Year! See you soon. RU

Archimedes Software

Disc 7 - Chess Program for The Archimedes.
A Chess program that takes full advantage of RISC OS, installing itself on the icon bar and running on the desktop in a window. You can work with other programs whilst you play Chess. Many features, computer play, hint, save games, edit etc. Risc User July 1991 said: *"Chess is an absolute bargain. .playing at a comparable level it always beat Micro Power's offering. ...this has to be the one to go for".*

Disc 8 - CrossStar 2.XX Crossword puzzle solver
Fully RISC OS compliant desktop Crossword puzzle solver. 200,000 word dictionary. Solves interlocking clues. Editable/user definable dictionaries. Saves grids as Draw files. Browse through dictionary. Check grid for new words.

Disc 16 - Spark RISC OS Archive program
Spark, allows you to store files and directories in archive files in a very compressed form. e.g. sprites often take up only 10% of normal space. Files in archives, can be accessed just like files on disc. Now new Spark series 2.XX, has lots more features. Reads all these formats, zoo, zip, lzh, UNIX and Archie Tar, Compress. Reads and writes PKarc, SEA/PC arc, uucode, atob/CET+, FCET.

Disc 19 - StarChart. Star maps.
Program that uses a database of 9000 stars etc. to produce star maps. Also calculates the positions of the planets and shows them on the maps. Star maps are in the form of Draw files and can be imported into !Draw etc..

Disc 32 - Charm. High level language and environment.
Charm, is a high level language similar to Pascal and C. This implementation, includes a compiler, linker and assembler, with an editor, and a desktop environment to use them. Demos with source, Chinese checkers.

Disc 33 - Panorama. Draw the World.
180,000 coordinates outlining the lakes, rivers, continents, state boundaries etc. of the World and a program that can produce Draw files from them. You can make maps of any part of the world and then use them in DTP etc. programs. Includes the positions of nearly 1000 cities. Does simple, cylinder, Mercator and perspective projections. Can be used from a single floppy disc and requires no setting up.

Disc 34 - ArcFS. Compressed filing system.
Allows files to be stored in archives in much less space, but because it is a true filing system, programs will work as normal. Read/write, so you can write files back to archives with just a key press. Files can be coded for security. Choice of compression method. Works with Spark and PC format archives.

Disc 35 - Trace. Banish those jaggy blues!
Takes Sprites and turns them into Draw files. Works with full colour Sprites. Sprite format pictures are plentiful, but if you try to scale them, they develop jagged edges. Trace allows you to convert them into Draw files which can be made any size you want. You can now use the powerful tools in Draw on Sprites.

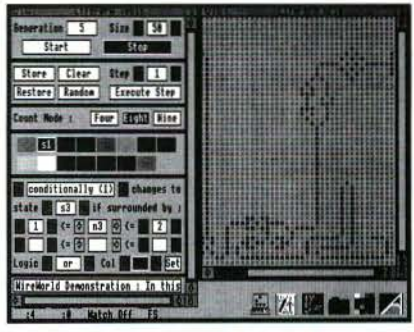
Discs are £5.99 each, all inclusive. Buy four claim one free!

David Pilling, P.O. Box 22, Thornton Cleveleys, Blackpool. FY5 1LR.
Free Air Mail delivery on overseas orders. Extensive range of other Archimedes software available (programmers tools, games, utilities, clip art), please send for free list.

LifeForms: The Ultimate Game of Life

by Richard Taylor

LifeForms allows the creation of dynamically changing patterns known as *cellular automata* (such as the well known "Game of Life"), and allows the rules governing the automata and the possible states of the cells in the automata to be totally user defined. The automata run in the multi-tasking Desktop environment, enabling the results of a particular cell pattern and rule combination to be studied and saved into special files.



The ultimate Game of Life

The whole system is user configurable, even down to the colours used for each state and to which neighbours affect the cells (which can include the cells themselves), and all this is done through an easy-to-use dialogue box.

The rules can be saved as a special rule file, and the magazine disc contains a number of example rule files, including *WireWorld* where "electrons" flow along "wires" and *Demons* where order is produced from the chaos of a random grid. All in all this offers a fascinating world of exploration in a fast and efficient implementation; you may have seen "Life" on the Archimedes, but this really is in a different league. RU

Both the applications on this page are supplied only on this month's magazine disc.

Floppy Disc Library Utility

by Colin Solloway

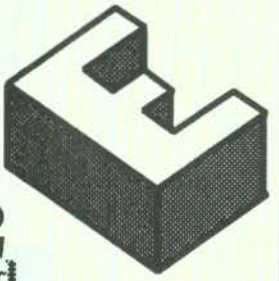
The Floppy Disc Library is an application which provides a unique and simple way to catalogue floppy discs and their contents. It achieves this by taking an 'image' of any source disc in ADFS drive 0 and placing it in a target directory. This allows the user to examine quickly the contents of all floppy discs together, either from the Desktop or the command line, as if viewing the actual discs. Among the many advantages of this, especially to hard disc owners, is that a 'Find File' utility can be used to search all directories, including those on floppy discs, in one pass.

Any !Sprites files contained within the catalogued disc images will not contain any sprites, as all files created in the images have length zero. Consequently, when the user opens a directory viewer on a disc image which contains an application directory, the default 'application' sprite will usually be seen and not the original sprite (such as the quill and scroll for Ovation).

The floppy disc images can be created on any disc and in any directory, except for floppy drive 0 (e.g. hard disc, RAM disc or floppy drive 1). Space permitting, the target directory for the floppy disc images will hold up to 5929 images in groups of 77 (the maximum number of entries possible in an ADFS directory).

Taking an image of a disc is easy - simply place the disc in drive 0 and click on the application's icon, and the image will be created. If the contents of a disc subsequently changes, performing the same action on the disc will alter the disc image to reflect the changes. Full instructions are included with the application on the disc. RU

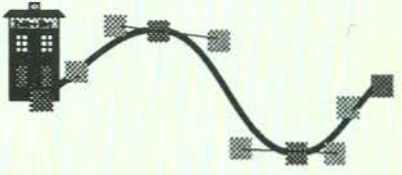
Ace Computing



Einstein = Multi dimensional C2 ad

Coming soon from the makers of ***Euclid, Mogul, Splice, Tween*** and ***ArcLight,*** is an addition to the range.

Einstein is a new tool for editing Space-Time, which provides a consistent approach to editing in 2, 3, 4 or even more dimensions.



"Any discussion of design with the Archimedes must include what has virtually become the standard 3D graphics and animation system.

I mean of course the *Euclid/Mogul/Splice* trio of packages from Ace Computing. *Euclid* is a Risc OS compliant, interactive, multi-document, 3D, graphics and animation program which is so easy to get to grips with.

Designs can be put together, rotated in real time, zoomed in and out of and viewed in perspective from any position...

...It is interesting to note that the next set of BBC TV's *Science Challenge* programmes employ *Euclid* graphics."

CHRIS DRAGE Education section
BBC ACORN USER February 1991

Ace Computing

PC Compatibility (Part 2)

Andrew Benham continues to investigate the extent to which PC applications work under the PC Emulator.

Last month I looked at some of the reasons why MS-DOS applications might not work under the Acorn PC Emulator, and in particular I considered the potential problems with hardware access, disc formats and mice. In this second part, I will look at keyboards, memory, processors, display options and serial ports.

KEYBOARDS

Even something as simple as the keyboard can cause some confusion. On PCs there are 2 common keyboards: *basic* and *enhanced*. The basic keyboard is akin to the BBC Master keyboard - the usual set of keys, plus 10 function keys (usually in 5 vertical rows of 2 to the left of the main keyboard) and a numeric keypad. The enhanced keyboard looks more like the Archimedes' keyboard - it has two additional groups of keys: the 4 cursor keys, and 6 'page movement' keys. Also, the 10 function keys are usually arranged along the top of the keyboard.

The Archimedes keyboard resembles a PC enhanced keyboard, but the Emulator doesn't treat it as one! I had an enquiry from a RISC User reader asking if it was possible to control the Num Lock state from software (as you can with a real PC with an enhanced keyboard). Unfortunately the answer appears to be "no": the BIOS reports that the machine doesn't have an enhanced keyboard, so the usual utilities fail, and my attempts at modifying the code have failed as well. The Archimedes keyboard has its own microprocessor which interfaces the keyboard to the main RISC processor, and this presumably makes it too different from the PC keyboard to implement all the PC features. With Num Lock off, the numeric keypad keys behave as cursor control keys (4=left, 6=right, etc.) which can be surprising. The more logical state is with Num Lock on, when the keys return numbers.

MEMORY

A typical low-end PC has 640K of RAM, and with 2 Mbytes or more in your Arc this is what you get from the Emulator. A 1 Mbyte Arc cannot quite manage 640K when running the Emulator. DOS was designed in the days when 64K of memory was the norm; 10 times this amount was thought to be the most that was ever likely to be needed, so DOS was designed to cope with 640K of memory as a maximum. Time has passed, and applications have grown to such a size that the 640K limit seems restrictive. In the PC world you will see references to expanded and extended memory - these are two ways of going beyond the 640K DOS limit. There is a difference, but what they have in common for Arc owners is that the PC Emulator supports neither. 640K is the limit here, so if a PC program needs extended or expanded memory, or if the version you are trying has been configured to use either of these, then it will not work under the PC Emulator.

PROCESSORS

The Emulator provides the user with a fairly 'low-end' PC. Versions before 1.6 claim to emulate an 8088 processor (though one of my utilities reported that it had found an 80186), while version 1.6 emulates an 80188. The difference between these processors is only really of academic interest as far as the average Emulator user is concerned. The important point to realise is that the PC which the Emulator "sees" isn't an 80286, nor is it an 80386 processor. Certainly in business environments these days, PCs with one of the latter two

processors (or the much more recent 80486) are almost the norm. Any piece of software that needs the resources of these more advanced processors won't work.

DISPLAY

When you buy a PC, you also have to buy a monitor and a compatible graphics card (which, despite the name, is needed to display text as well). There are various standards of graphics cards (some less standard than others!). Those which are commonly found are:

MDA
CGA
EGA
VGA
S-VGA
XGA
Hercules.

Often individual programs will need to be configured to use the appropriate graphics card, and so these types (except perhaps S-VGA and XGA) are likely to be mentioned in program configuration details. Versions of the Emulator before 1.6 provided a CGA graphics environment, and so any piece of software must be capable of working in (and being set up for) CGA graphics if you are using an earlier Emulator. In the business world, EGA or VGA is much more likely to be the accepted norm. The latest multi-tasking Emulator (version 1.6) supports EGA and EGA+ (provided that you have a 2Mb machine or greater). EGA+ approaches the performance of VGA.

COM (SERIAL) PORTS

PC users often expand their machine with several COM ports. All machines support two COM ports, and it is possible, although not always easy, to add more. The PC numbers the ports starting with COM1, then COM2 and so on. The Emulator provides only one COM port, and this appears as COM1. As mentioned last month when discussing mice, some PC mice are connected to serial ports, and thus permanently use one COM port (often COM1). This means that if you are trying a genuine PC communications program, it may be set up to use COM2 as the default serial port. The Archimedes mouse appears to the PC Emulator to be a bus mouse, and therefore COM1 is free for communications programs.

If the software has an option to use BIOS access to the port, this is the best one to try. The instructions may say that this is not the best option (maybe pointing out that the top speed will be 1200 baud or so, rather than the 38400 baud available by direct hardware access), but remember that the instructions are written for PCs rather than Acorn Emulators. My favourite PC communications package is MS-Kermit. It's public domain, has very good built-in help, is fully documented and works very well when set up to use BIOS access to the Archimedes serial port.

ADDITIONAL HARDWARE

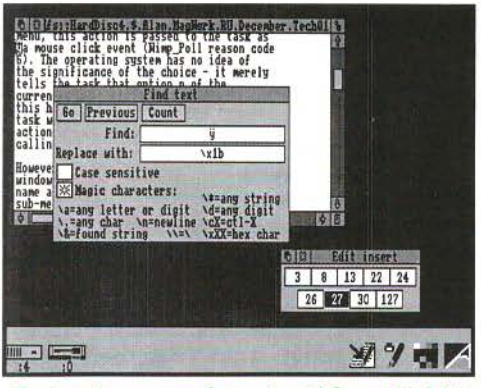
It probably goes without saying, but any piece of software that needs additional hardware in the PC is almost certainly doomed. If a PC plug-in card is needed, then there's no way of plugging it into the Archimedes. Any piece of software which relies on a dongle plugged into a COM or parallel (LPT) port is probably doomed as well; the dongle usually uses direct hardware manipulation in odd ways, and the Emulator probably won't handle this (in fact, 'dongles' often don't work in supposedly PC compatible machines anyway).

Although it may seem from these articles that there are a host of pitfalls waiting for users of the Emulator, many popular and powerful applications will work quite happily (some were mentioned in the review of version 1.6 in Volume 4 Issue 10). That the Archimedes can run PC software at all is quite an achievement; that it does it so successfully is a great credit to Acorn. RU

Control Code Insertion Utility for Edit

by Alan Wrigley

The problem of inserting Escape code sequences into an Edit document has been highlighted more than once in past issues of RISC User. The difficulty arises because it is not possible to insert the Escape character itself (ASCII 27) directly into the text (for example by typing the code on the numeric keypad while holding down Alt) since Edit simply treats it as if the Escape key had been pressed and thus ignores it (though DeskEdit has a special control code mode specifically for this purpose).



The insertion process frozen in mid-flow, with Edit's search/replace box momentarily on the screen, and EdInsert's window visible at the bottom right

The way to overcome this with Edit is to type in an otherwise unused character, for example the international currency character (ASCII 164, above the pound sign on the keyboard), and then use Edit's search and replace facilities, with magic characters turned on, to replace this with the required Escape character. However, this is a rather long-winded way of going about it, requiring a large number of key presses to achieve the desired result.

The application presented here, *EdInsert*, does the job automatically, and for good measure will also insert into the document any of the other control characters which cannot normally be entered directly from the keyboard when using Edit. These are: ASCII 3 (Ctrl-C), 8 (Ctrl-H), 13 (Ctrl-M or carriage return), 22 (Ctrl-V), 24 (Ctrl-X), 26 (Ctrl-Z), 30 (Home) and 127 (Delete). All these codes are shown in EdInsert's window, and clicking on any of them will insert that code into the current Edit document, provided there is one and that it has the input focus.

CREATING THE APPLICATION

First of all, create an application directory called *!EdInsert*, which should contain the usual !Run, !Sprites and !RunImage files. !Run is an Obey file with the following lines:

```
IconSprites <Obey$Dir>.!Sprites
WimpSlot -min 16K -max 16K
Run <Obey$Dir>.!RunImage
```

!Sprites should contain the usual 34x17 pixel sprite called *!edinsert*, while !RunImage is the Basic program given in listing 1.

HOW IT WORKS

Using EdInsert is simplicity itself. Double-clicking on its icon in a directory viewer installs the application on the icon bar, where clicking Select will open a small window containing 9 icons (see illustration). Each of these is numbered to correspond with the code which will be inserted into Edit when Select is clicked over that icon. This action will initiate the insertion process which involves sending a string of characters to Edit to simulate the search/replace routine described above. This is done by trapping null reason codes during the Wimp_Poll loop, and sending one character from the sequence at a time using Wimp_ProcessKey, until the whole string has been sent, when null reason codes will again be masked out.

Before starting the process, EdInsert checks to see which task owns the caret. This is done in lines 400-480 by calling Wimp_GetCaretPosition and sending a TaskNameRq message to the Task Manager. The Task Manager returns a TaskNameIs message, and if this is not "Edit" then EdInsert reports an error.

Assuming that Edit is in fact the owner of the caret, a dummy character is first of all inserted into the text. ASCII 255 has been used here, but almost any other character could be used. The cursor is then sent back one space with a left arrow, and the search/replace dialogue box is activated with F4. EdInsert now makes use of a very useful feature of RISC OS dialogue boxes, namely the mapping of function keys to the various selectable icons within the box. In this case, F5 toggles magic characters on or off. EdInsert requires them to be on, so it reads the state of the icon in lines 790-820 and issues an F5 keypress if it is currently off.

Now the search and replace strings need to be entered into the writable icons (with carriage returns after each). The search string is of course ASCII 255, while the replace string will be "\x" plus the hex representation of the appropriate control code. This results in Edit's *Text found:* dialogue box being displayed, and EdInsert now issues F3 to effect the replacement followed by F1 to stop the search/replace process. Finally Ctrl-Z clears the highlight and right arrow returns the cursor to the position where it had been originally.

As you can imagine, this all takes a little time, and you will see the dialogue boxes flash on the screen while the process is taking place. You should not try to click on a second character, or press a key, until the whole procedure has finished, since this will most likely upset the sequence and fail to produce the desired result.

```
10 REM            >!RunImage
20 REM Program    Edit Insert
30 REM Version    A1.00
40 REM Author     Alan Wrigley
50 REM RISC User  December 1991
60 REM Program    Subject to Copyright
70 REM            Not Public Domain
80 :
90 PROCinit
100 ON ERROR PROCerror(REPORT$+" - int
ernal error code "+STR$ERL)
110 :
120 REPEAT
130 SYS "Wimp_Poll",mask%,bk% TO poll%
140 CASE poll% OF
150 WHEN 0:PROCsend
160 WHEN 2:SYS "Wimp_OpenWindow",,bk%
170 WHEN 3:SYS "Wimp_CloseWindow",,bk%
180 WHEN 6:PROCbutton
190 WHEN 9:quit%=TRUE
200 WHEN 17,18:PROCmassage
210 ENDCASE
220 UNTIL quit%
230 SYS "Wimp_CloseDown"
240 END
250 :
260 DEFPROCbutton
270 ic%=bk%!16
280 CASE bk%!12 OF
290 WHEN -2:CASE bk%!8 OF
300 OTHERWISE:SYS "Wimp_CreateMenu",,m
enu%,!bk%-64,140
310 WHEN 4:!bk%=han%
320 SYS "Wimp_GetWindowState",,bk%
330 bk%!28=-1:SYS "Wimp_OpenWindow",,b
k%
340 ENDCASE
350 WHEN han%:IF bk%!8 AND 5 PROCclick
360 ENDCASE
370 ENDPROC
380 :
390 DEFPROCclick
400 SYS "Wimp_GetCaretPosition",,bk%
410 win%=!bk%:IF win%=-1 THEN
420 PROCerror(err$)
430 ELSE
440 !bk%=256
450 SYS "Wimp_SendMessage",0,bk%,win%
TO ,,task%
460 bk%!12=0:bk%!16=&400C6
470 bk%!20=task%
480 SYS "Wimp_SendMessage",17,bk%,0
490 ENDIF
500 ENDPROC
```

```
  510 :
  520 DEFPROCmassage
  530 CASE bk%!16 OF
  540 WHEN 0:quit%=TRUE
  550 WHEN &400C7:
  560 PROCinsert(FNstring(bk%+28))
  570 ENDCASE
  580 ENDPROC
  590 :
  600 DEFFNstring(i%)
  610 a$="":WHILE ?i%>31
  620 a$+=CHR$(?i%):i%+=1
  630 ENDWHILE
  640 =a$
  650 :
  660 DEFPROCinsert(t$)
  670 IF t$="Edit" THEN
  680 count%=0:FOR i%=1 TO 2
  690 char%(i%+7)=ASCMID$(code$(ic%),i%,
1)
  700 NEXT:PROCsend:mask%=&1830
  710 ELSE
  720 PROCerror(err$)
  730 ENDIF
  740 ENDPROC
  750 :
  760 DEFPROCsend
  770 CASE count% OF
  780 WHEN 3:
  790 SYS "Wimp_GetCaretPosition",,bk%
  800 bk%!4=9
  810 SYS "Wimp_GetIconState",,bk%
  820 IF (bk%!24 AND &200000)=0 PROCkey(
&185)
  830 OTHERWISE:PROCkey(char%(count%))
  840 ENDCASE
  850 count%+=1:IF count%=15 mask%=&1831
  860 ENDPROC
  870 :
  880 DEFPROCkey(a%)
  890 SYS "Wimp_ProcessKey",a%
  900 ENDPROC
  910 :
  920 DEFPROCerror(a$)
  930 !bk%=1:$(bk%+4)=a$+CHR$0
  940 SYS "Wimp_ReportError",bk%,1,name$
  950 ENDPROC
  960 :
  970 DEFPROCinit
  980 DIM bk% 400,menu% 52,spr% 800
  990 DIM name% 12,code$(8),char%(14)
 1000 quit%=0:mask%=&1801
 1010 send%=0:name$="EdInsert"
 1020 err$="Edit does not own the caret"
 1030 FOR i%=0 TO 8:READ code$(i%):NEXT
 1040 FOR i%=0 TO 14:READ char%(i%):NEXT
 1050 SYS "Wimp_Initialise",200,&4B53415
4,name$
 1060 :
 1070 !bk%=588:bk%!4=168
 1080 bk%!8=958:bk%!12=296
 1090 bk%!16=0:bk%!20=0:bk%!24=-1
 1100 bk%!28=&87000012:bk%!32=&1070207
 1110 bk%!36=&20000:bk%!40=0
 1120 bk%!44=-1024:bk%!48=1280:bk%!52=0
 1130 bk%!56=25:bk%!60=&3000:bk%!64=1
 1140 bk%!68=0:$(bk%+72)="Edit insert"
 1150 bk%!84=9:ptr%=bk%+88
 1160 FOR i%=0 TO 4:READ a$
 1170 !ptr%=10+70*i%:ptr%!4=-60
 1180 ptr%!8=80+70*i%:ptr%!12=-8
 1190 ptr%!16=&701903D:$(ptr%+20)=a$
 1200 ptr%+=32:NEXT
 1210 FOR i%=0 TO 3:READ a$
 1220 !ptr%=45+70*i%:ptr%!4=-120
 1230 ptr%!8=115+70*i%:ptr%!12=-68
 1240 ptr%!16=&701903D:$(ptr%+20)=a$
 1250 ptr%+=32:NEXT
 1260 SYS "Wimp_CreateWindow",,bk% TO ha
n%
 1270 :
 1280 $menu%=name$
 1290 menu%!12=&70207:menu%!16=120
 1300 menu%!20=44:menu%!24=0
 1310 menu%!28=&80:menu%!32=-1
 1320 menu%!36=&7009031
 1330 $(menu%+40)="Quit"
 1340 :
 1350 !spr%=800:spr%!4=0
 1360 spr%!8=16:spr%!12=16
 1370 SYS"OS_SpriteOp",&10A,spr%,"<Obey$
Dir>.!Sprites"
 1380 !bk%=-1:bk%!4=0:bk%!8=0:bk%!12=68
 1390 bk%!16=68:bk%!20=&3002
 1400 $(bk%+24)="!"+name$
 1410 SYS "Wimp_CreateIcon",,bk%
 1420 ENDPROC
 1430 :
 1440 DATA 03,08,0d,16,18,1a,1b,1e,7f
 1450 DATA 255,&18C,&184,0,255,13,92
 1460 DATA 120,0,0,13,&183,&181,26,&18D
 1470 DATA 3,8,13,22,24,26,27,30,127
```

RU

RISC User Disc Contents

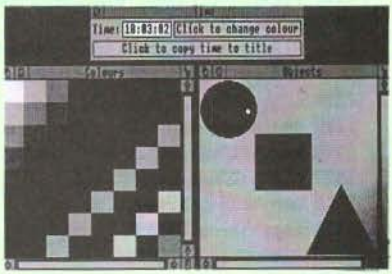
Utility to Insert Control Codes into Edit

A very useful utility that enables control codes to be entered into an Edit document.

Icon Bar Shell with Save

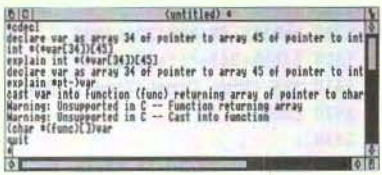
The Icon Bar Shell application from Volume 4 Issue 7 extended to incorporate a save box facility.

Exploiting The Wimp (Part 2)



A demonstration of the procedures and techniques described in this issue.

Using ANSI C (Part 6)


(untitled) *
declare var as array 34 of pointer to array 45 of pointer to int
explain int *(*var[34])[45]
declare var as array 34 of pointer to array 45 of pointer to int
explain not-3var
cast var into function (func) returning array of pointer to char
Warning: Unsupported in C -- Function returning array
Warning: Unsupported in C -- Cast into function
(char *(func)[])var
quit

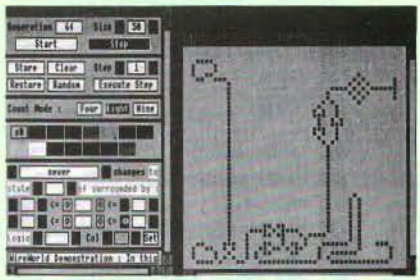
Example of a Wimp application written in C using *dbox* event handlers.

ADDITIONAL ITEMS REFERRED TO IN THE MAGAZINE

Floppy Disc Library Utility

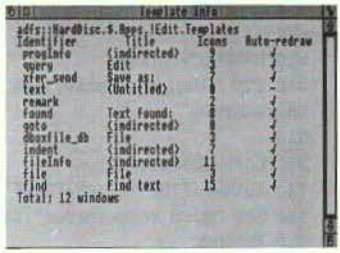
A utility that enables images of floppy discs to be made for easy reference.

LifeForms - The Ultimate Game of Life



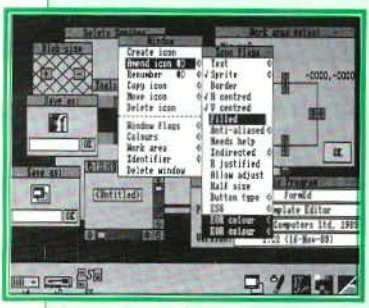
An extremely comprehensive implementation of cellular automata, including the Game of Life and WireWorld.

Template Information Display Utility

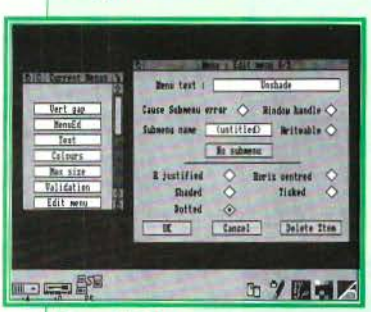


A very useful application that gives information on definitions within template files that are dragged onto the application icon.

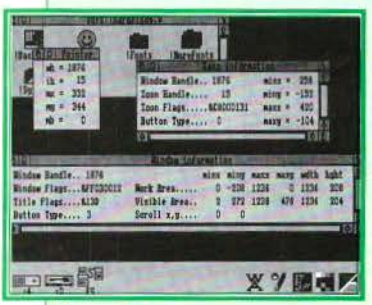
All of these powerful applications and



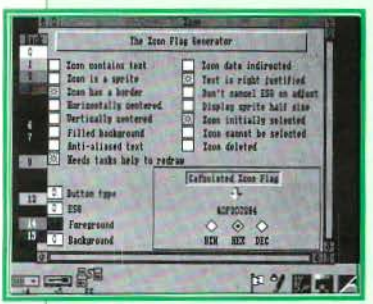
Template editor



Menu Editor



WimpAid



Icon Flag Generator

Wimp Programmer's Toolkit

A compilation of twelve powerful multi-tasking utilities, supported by a comprehensive manual - an essential aid to any programmer.

SPYGLASS
A multi-tasking memory viewer which allows you to select any running application and display in a window the contents of the memory allocated to it.

WIMP DEBUGGER
A powerful application which allows you to debug Wimp-based programs while testing and running them.

TEMPLATE EDITOR
The latest version of Acorn's FormEd, a multi-tasking application for designing windows and icons.

TEMPLATE FILE BROWSER
This application allows you to view the contents of a template file. It shows all the co-ordinates, flags, titles etc. of each window or icon in a the template.

APPLICATION SHELL GENERATOR
A Desktop utility for creating application directories, Obey files and their sprites.

MENU EDITOR
This application enables you to create and edit Wimp menu structures for use in your own programs.

WIMPAID
A powerful application for Wimp programmers allowing pointer, window and icon parameters to be dynamically displayed on screen.

ICONBAR SHELL GENERATOR
This allows you to build simple multi-tasking programs very easily, by creating a shell which installs an icon on the icon bar and passes information about button clicks and dragged objects to your own routines.

DESKTOP FILE LOADER
A very useful utility which allows you to load a program from the Desktop, rather than run it.

ICON FLAG GENERATOR
Use this application to calculate the value of icon flags easily, without recourse to binary arithmetic.

EASYWIMP
This program provides a ready-made Wimp application shell which can be used for the quick and simple creation of single-window applications.

WIMP MESSAGE MONITOR
An application which provides a means of monitoring the Wimp polling system.

Members Price **£14.95** *inc.VAT (non-members price £19.95 inc. VAT)*
Please add p&p (see back page of this supplement).
Stock Code: PWPTb

Send your orders to:

RISC Developments Ltd,
117 Hatfield Rd, St Albans, Herts AL1 4JS.
Tel (0727)40303 Fax (0727)860263

DeskEdit

An advanced multi-tasking Text Editor for the Archimedes

DeskEdit is the ultimate all-purpose editor for the Archimedes, with special features tailored for use with plain text, Basic and C source.

Language specific features:

Plain text

DeskEdit will format word-wrapped text as you type (and to prove it, DeskEdit's 48 page manual was created and edited using DeskEdit itself).

Basic

Drag a Basic file to the icon, and it will automatically be detokenised and loaded into DeskEdit ready for editing. Press F3 to retokenise and save it after editing. Optional line number stripping. Auto indent, automatic line number insertion, and checking for matched brackets and quotes - as you type.

Special Basic browser:

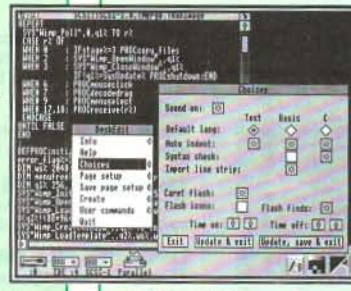
Ctrl R steps through all REM lines
Ctrl D steps through all procedure and function definitions
Ctrl P steps through all procedure references
Ctrl F steps through all function references

C language

Special C language features include a simple syntax checker which operates as you type.
Auto indent facility combined with automatic generation of opening braces streamlines source code entry.

C Function browser:

Ctrl-F steps through function definitions.



Editing Basic

General editing features

Three special Find and Replace modes - from Simple to Power Search - the latter uses Twin-like specifiers

Additional Quick-Search mode for rapid retrieval

Text macros to insert user strings in both text and source code

Special Undelete buffer for moving text around, in addition to Edit-style Undo/Redo

Dedicated markers and position finders for finding your way around large files - create your own automatic indexer at the top of any file, and use it to move at a single keypress to any point referred to in your index. Ideal for both text use, and Basic and C source code.

Clipboard, providing an alternative way to move text around

Hardcopy options

Plus

On screen Help - full documentation in a scrollable window

Instant file info feature, and current directory setter

Caret flash controller for DeskEdit and other applications

Customised user commands to open directories, run other applications and launch Obey files - all from DeskEdit's menu

Numerous keyboard shortcuts including date and filename insertion, changing case, moving windows to the front or back of the stack, parking the mouse pointer, inserting printer codes etc. etc.

This feature-packed editor is ideal for editing Basic, text files, Obey files, C source code etc.

Everything that you have ever wanted to be able to do in Edit, but couldn't.

DeskEdit, which is supplied with a 48 page manual and a function keystrip,
Members' price is **£19.95** inc. VAT.

Stock Code : PEDTb

Please add p&p (see back page of this supplement)

Printout

Printout makes full use of Acorn's version 2 drivers to provide fast text printout including style codes for bold, underline, italics, page breaks etc - all entered at the keyboard using simple keypresses.

Special text printing options with headers, footers, page numbering and style codes. Headers and footers can contain filename, date, time, page numbers (optionally offset) etc, and may contain their own style codes, and be left right or centre justified.

Print options include a useful Preview mode allowing you to see exactly what would be printed, before using any paper. This is useful for checking headers, footers page breaks etc.

Additionally a Statistics option gives a brief summary of aspects of the text to be printed, including character, word, line and page count.

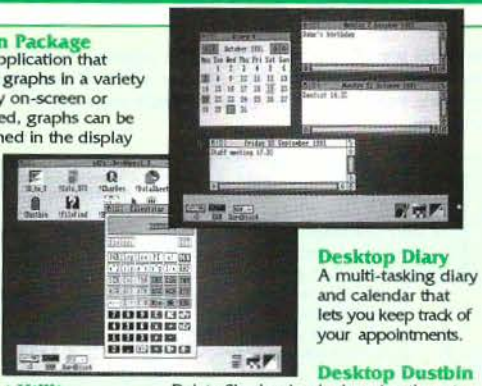
RISC developments

The former Publications, software and hardware activities of BEEBUG have been incorporated as a new company called RISC Developments Ltd. in order to develop and expand a range of products for the Acorn market.

117 Hatfield Road, St. Albans, Herts AL1 4JS Tel. (0727) 40303 Fax. (0727) 860263

Desktop Applications 1

A selection of 12 multi-tasking stand-alone applications



Data Presentation Package
A very impressive application that allows you to create graphs in a variety of formats for display on-screen or printing. Once created, graphs can be re-sized and positioned in the display window, and the data can be edited.

Scientific Calculator
An implementation of a scientific calculator. It includes all the usual functions: Sin, Cos, Log, Ln etc.

Multi-format Print Utility
Print text files, Basic program listings and Sprites by simply dragging them to the icon bar.

NotePad
A Desktop Notepad application which allows up to eight pages of notes to be jotted down. They can be saved for later reference, or printed out.

Desktop Diary
A multi-tasking diary and calendar that lets you keep track of your appointments.

Desktop Dustbin
Delete files by simply dragging them to the bin on the icon bar. Accidentally deleted files can be recovered by dragging them out of the bin, and multiple files can be deleted by first selecting them together.

Character Designer
Define new system fonts with this application.

HotKeys
A Desktop hotkeys utility that allows single key presses to perform a wide range of functions, such as opening directory viewers, starting applications or saving screens.

Mouse-speed Controller
Change the mouse speed merely by clicking on an icon. This can be very useful when a large degree of precision is required, without slowing down the mouse all the time.

Filetype Setter
Change the filetype of any file by dragging it to the icon bar.

Desktop Application Handler
This useful utility converts Basic programs to text files and vice-versa, allowing programs to be edited without leaving the Desktop.

File-find utility
Search a directory hierarchy for a given file, directory, or application. This utility is fully compatible with floppy and hard discs, as well as with Econet.

ArcOmnibus

7 Original Archimedes games

Amaze A graphically superb sliding block game with a difference.

Cribbage An excellent implementation of the well known card game.

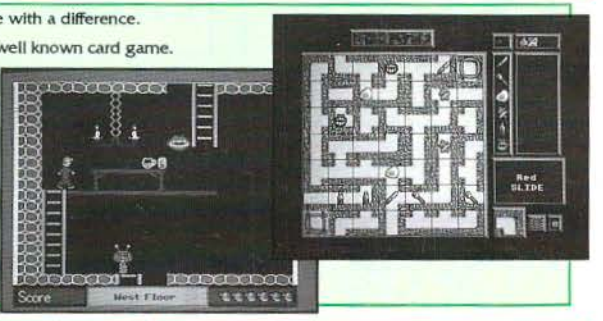
Moric A colourful 'ladders and levels' game.

Ogre's Lair A highly entertaining arcade type game, providing hours of fun.

Pick a Pair A colourful game testing your skills of observation and memory.

BalloonMan Burst the balloon - a Pacman style of game.

Dominoes A Desktop version of the classic game of dominoes.



	Stock Code	Members' Price	Normal Price
Desktop Applications disc + documentation	PDA1a	£ 9.95	£14.90
ArcOmnibus Games disc + documentation	PAOMa	£ 9.95	£14.90

(All prices include VAT. Please add p&p)

Post & Packing	UK	Europe	Americas, Africa Middle East	Elsewhere
a	£ 1.00	£ 1.60	£ 2.40	£ 2.60
b	£ 2.00	£ 3.00	£ 5.00	£ 5.50
c	£ 3.10	£ 6.50	£10.50	£11.50
d	£ 3.60	£15.50	£24.50	£25.50
e	£ 6.00	£15.50	£24.50	£25.50

RISC Developments Software

Special Offers to RISC User Members

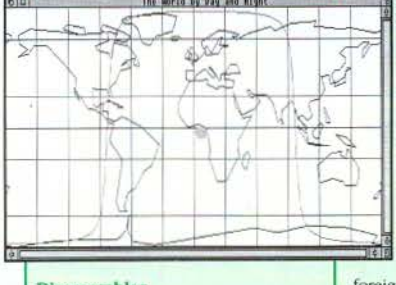
Code	Product	Members Price inc VAT	Code	Product	Members Price inc VAT
0090a	Star/Epson Colour Printer Driver	15.86	0107c	C Development System	80.72
0091a	Ovation font upgrade	8.81	0108c	Ovation (Beebug DTP)	101.16
0092b	TypeStudio	47.59	0111b	Outline Font Pack 1	50.57
0093c	Hearsay II	79.31	0796b	Serial Link	17.63
0094b	Hard Disc Companion (release 2)	47.59	0112c	Hearsay II upgrade	41.13
0100b	Masterfile Archimedes	16.86	0114a	Ovation Demo Disc	5.00
0102a	DFS reader	10.12	0796b	Serial Link Kit	17.63

RISC User Volume 4 Special Disc

To mark the successful completion of the fourth year of publication of RISC User magazine we have launched the Volume 4 Special Disc. The Special Disc contains a selection of the best programs published throughout the ten issues of Volume 4, updated where appropriate, plus a selection of new and specially written items. The Special Disc contains the following items:

Converting Outline Fonts to Draw Files
A powerful application which you can use to add artistic flair to any DTP design. *DrawFont* enables text in an outline font to be converted into a standard Draw object and manipulated within Draw. You can produce some startling effects - text can be rotated, tilted, stretched or condensed, or you can choose to change the shape of individual letters.

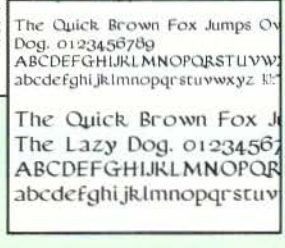
World by Day and Night
Displays a map of the world with the position of the sun and areas of light and dark, automatically updated every minute.



Disassembler
This useful Wimp program enables you to disassemble ARM code program files in a multi-tasking window.

Form Designer
An application which makes the creation of printed forms and tables, or any blank forms, very easy indeed. It offers useful symbols and icons, template files and sprites, and when used in conjunction with a word processor or editor, will allow you to create any form quickly and effectively.

Inlay
Multi-tasking audio cassette inlay creator.



New Fonts
A selection of outline fonts, including Atlantis and Black Letters.

Super BackDrop
A very versatile implementation of the sticky backdrop concept, which allows you to stick file and directory icons onto the Desktop for quick access - many features.

Yahtzee
A multi-tasking implementation of the traditional dice game.

Currency Converter
A short application which allows you to convert certain foreign currencies into pounds and vice versa.

ArcScan Index to RISC User Vol. 4.

Desktop Command Controller
A multi-tasking utility, which allows you to run operating system commands from a user-defined menu on the Desktop, e.g. select different sets of function key definitions, install modules and applications, or open directory windows with a single button press.

Monitor Saver
A very useful application which will display one of several changing patterns on the screen to prevent an otherwise fixed image from permanently damaging the screen. Choose your display from any one of: a sliding block puzzle, a floating real-time clock, rain drops, explosions and others.

Desktop Toilet
A novel application with appropriate digitised sound effects allowing you to flush away any unwanted files.

Mandelbrot Plotter
A superfast Mandelbrot generator which uses Mariani's algorithm to produce a plot in under 2 seconds.

Archimedes ClipArt
An exciting selection of clip art.

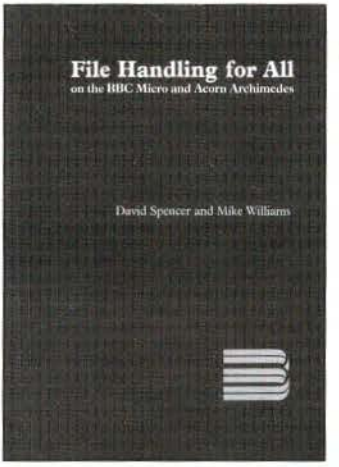
Music
Five enjoyable new Maestro music files and a multi-tasking player.

All this for just £4.95 inc. Vat

Offer available to members only until the 31 December 1991
(Normal members' price will be £9.95 inc. VAT after the 31 December)
Stock Code PV4Sa Please add p&p (see back page of this supplement)

RISC Developments Ltd., 117 Hatfield Rd., St Albans, Herts AL1 4JS. Tel. (0727)40303 Fax (0727) 860263

RISC User Advertising Supplement



File Handling for All

on the BBC Micro and Acorn Archimedes

by David Spencer and Mike Williams

Computers are often used for file handling applications yet this is a subject which computer users find difficult when it comes to developing their own programs. The book *File Handling for All* aims to change that by providing an extensive and comprehensive introduction to the writing of file handling programs with particular reference to Basic.

File Handling for All, written by highly experienced authors and programmers David Spencer and Mike Williams, offers 144 pages of text supported by many useful program listings. It is aimed at Basic programmers, beginners and advanced users, and anybody interested in File Handling and Databases on the Beeb and the Arc. However, all the file handling concepts discussed are relevant to most computer systems, making this a suitable introduction to the file handling for all.

The book starts with an introduction to the basic principles of file handling, and in the following chapters develops an in-depth look at the handling of different types of files e.g. serial files, indexed files, direct access files, and searching and sorting. A separate chapter is devoted to hierarchical and relational database design, and the book concludes with a chapter of practical advice on how best to develop file handling programs.

The topics covered by the book include:

Card Index Files	Serial Files
File Headers	Disc and Record Buffering
Using Pointers	Indexing Files
Searching Techniques	Hashing Functions
Sorting Methods	File System Calls
Networking Conflicts	Testing and Debugging

The associated disc contains complete working programs based on the routines described in the book and a copy of Filer, a full-feature Database program.

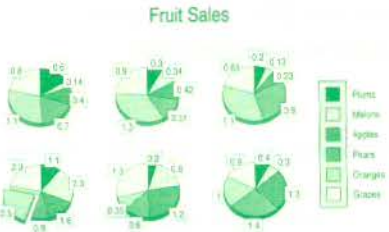
File Handling for All Book	**£ 9.95** + p&p	Stock Code **BK02b**
Disc supporting the book	**£ 4.75** + p&p	Stock Code **BK03a**
	For p&p see the last page of this supplement.	
SPECIAL OFFER to RISC User members:		
File Handling for All book and disc	**£ 11.95** + p&p	Stock Code **BK01b**

RISC Developments Ltd, 117 Hatfield Rd, St.Albans, Herts AL1 4JS. Tel (0727) 40303 Fax (0727) 860263

ChartWell

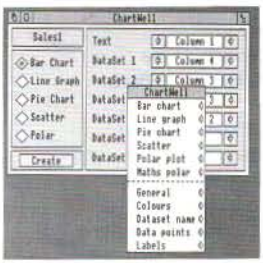
A sophisticated Graph and Chart Package at an affordable price

ChartWell offers **24 different graph types** including:
horizontal and vertical bar charts,
line graphs,
scatter charts,
polar plots,
and pie charts.



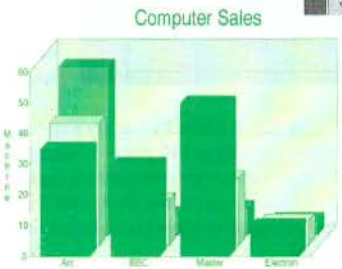
A single chart or graph can **display up to 6 different data sets**, including up to six pie charts in a single display.

An added option is proportional sizing, segment withdrawal in pie charts, labelling etc.



Data can be imported from other applications, such as spreadsheets, databases, or created with a suitable editor as a text file.

Output is in standard Draw format for import into Draw or any other application, DTP for example.



ChartWell allows a variety of **display options :**

flat or 3D bar and pie charts,

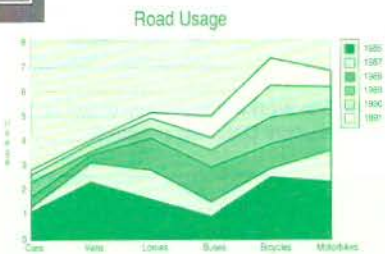
user choice of angle for 3D pie chart display,

clustered, stacked or layered bar charts,

scatter graphs with choice of curve fitting techniques, regression lines and correlation coefficients, and use of error bars,

line graphs with choice of normal, cumulative area or stacked area displays.

ChartWell gives you **complete user control** over:
choice of colour,
data point styles,
bar widths and spacing,
use of titles and labels,
legends to provide a key,
graduated and shaded backgrounds,
scales and tick marks, etc.



Flexibility
ChartWell allows you to select only part of the data for display.

You can also change the order of display - a useful feature when creating bar charts - data can be arranged in ascending order so long bars will not overlap shorter ones.

Use of **'style sheets'** allows a set of options to be saved with data for future reference. User choice of start-up options.

Chartwell is supplied with an Outline Font Manager and Swiss-B outline font.

The disc includes demonstration data and graph files.
The package is supplied with a full reference manual with an introductory tutorial section.
Price **£24.95** (inc.VAT) to RISC User members, **£28.95** (inc.VAT) to non-members. P&P is extra. Stock Code **PCHWb**

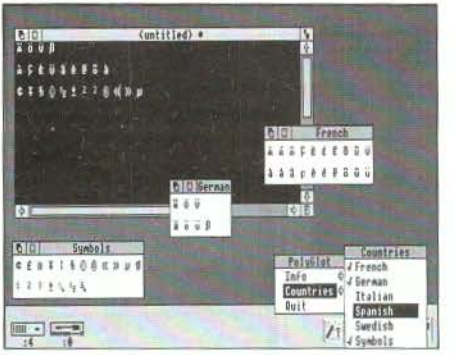
RISC Developments Ltd. 117 Hatfield Rd, St. Albans, Herts AL1 4JS. Tel. (0727) 40303 Fax (0727) 860263

RISC User Advertising Supplement

RISC User Advertising Supplement

PolyGlot

A fully multi-tasking application which provides fast and easy access to foreign language character sets when using word processors, DTP packages, spreadsheets, databases or indeed any other multi-tasking packages.



Open a window for any specified language, and this will display all characters which are impossible or difficult to obtain from the keyboard:
for example, accented characters in French - **é â è**
or umlauted characters in German - **ü ö ä**

Select any of these characters with the mouse and it will automatically be inserted into your document.

Why PolyGlot is Better than any Other System

You can see all the characters you need in a window in both upper and lower case; you do not need keyboard overlays

You do not need to set your keyboard to a foreign standard to obtain appropriate foreign characters.

You can work with different languages or alternative character sets at the same time.

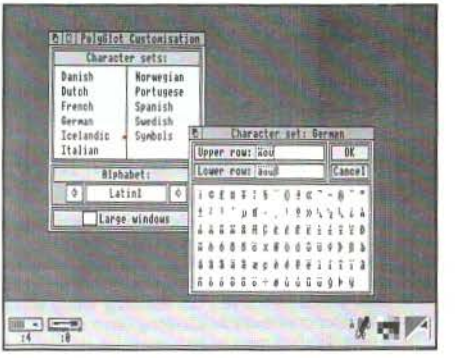
You can tailor and customise the package to your own needs.

You can use any character set , any alphabet and even scientific characters (provided your fonts support these).

Each PolyGlot window can be displayed at one of two sizes.

Normal size displays the characters at the usual system font size (as for example filenames in directory viewers, or commands typed at the command line).

Large size shows the characters at approximately twice the normal size.



PolyGlot is Fully Customisable

You can tailor each individual copy of the application to your own specific requirements and include only those languages and characters, which you actually need.

You can use PolyGlot as a simple way of selecting from any set of characters, not just those which relate to a specific language.

For example, you could have a PolyGlot window open for **currency signs:** £, $,
or **other symbols:** Ω √ ∫ µ

You can also customise PolyGlot to use any of the available alphabets within your Archimedes. For this you must have suitable outline fonts or printers which support alphabets other than the standard Latin1.

This facility will be ideal for education, where the package can be readily tailored to suit the needs of both individuals and classes.

PolyGlot is available for £14.95 (inc VAT) to members. Stock Code PGLTb.
Ford p&p see back cover of this supplement.

RISC Developments Ltd.
117 Hatfield Rd. St.Albans, Herts AL1 4JS Tel. (0727) 40303 Fax. (0727) 860263

ArcScan III

A fully customisable all-purpose reference finder for books, magazines and manuals.

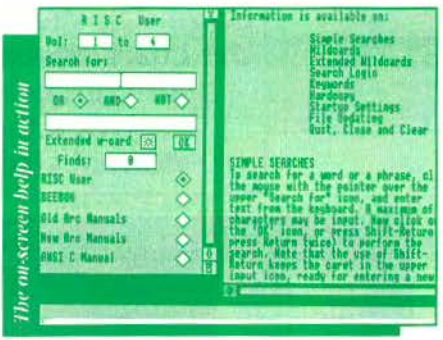
Now offers a Library Disc containing two new databases: Acorn User and Micro User magazine indexes

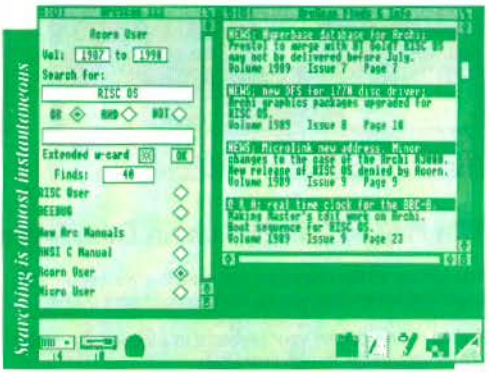
ArcScan III Program Disc contains the following Databases:

- RISC User Volumes 1, 2 and 3
- BEEBUG Volumes 1 - 9

The Indexes to the following major Archimedes manuals:

- Basic User Guide (Arthur)
- Programmer's Reference Manual (Arthur)
- RISC OS User Guide
- RISC OS Basic Manual
- RISC OS Programmer's Reference Manual
- ANSI C Manual (Release 3)





ArcScan Library Disc

Offers an index for Acorn User and Micro User magazines from January 1987 to date. This includes all references to the Archimedes, which was launched in June 1987.
The Library Disc will be regularly updated to include the latest issues, and upgrades will be available from BEEBUG. As a **Special Offer** you can purchase an ArcScan Library disc with vouchers for two upgrades for the price of £12.95. In the future we are hoping to add an index for A&B and Archimedes World magazines.

Some of the features ArcScan III offers:

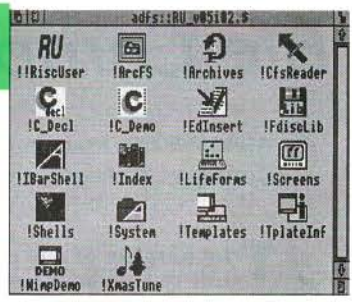
- provides flexible keyboard search on any entry
- improved search logic - choice of 3 logical operators: OR, AND and NOT
- now with new extended wildcard option
- features dynamic memory management, returning unused memory to the Wimp
- uses dedicated ARM code routines enabling rapid information retrieval
- finds are displayed in a fast scrolling Wimp window allowing you to browse through all entries retrieved
- fully user customisable allowing other databases to be automatically incorporated in the control panel display
- a new detailed manual and extensive on-screen help

ArcScan Library Disc	**£ 7.95** members (£9.95 non-members)	Stock Code **PAL1a**
ArcScan Library Disc + 2 Upgrades	**£12.95** members (£16.95 non-members)	Stock Code **PALXa**
ArcScan Library Disc Upgrade	**£ 3.45** members (£4.45 non-members)	Stock Code **PALUa**
ArcScan III Program Disc + Manual	**£14.95** members (£18.95 non-members)	Stock Code **PAS3b**
ArcScan III Program Disc + Library Disc+Manual	**£19.95** members (£24.95 non-members)	Stock Code **PASXb**

All prices are inc. VAT. Please add p&p. For upgrade, please send the old ArcScan II disc or label. Please quote your Membership number.

RISC Developments Ltd, 117 Hatfield Road, St Albans, Herts AL1 4JS. Telephone (0727) 40303 Fax (0727) 860263

December 1991

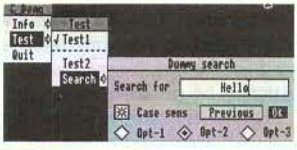


This month's disc menu

Customised Desktop Templates

Two template files that allow windows in the Desktop to go behind the icon bar, and filer windows to become unbounded.

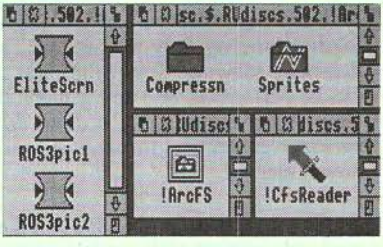
Utility to Interpret C Declarations



David Pilling's utility to convert C declarations into English and vice versa.

BONUS ITEMS

ArcFS, Compression and Example Files

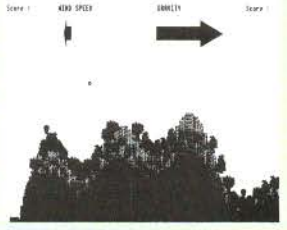


The latest version of the Public Domain archive file reader from David Pilling together with the PD file reader for the new file compression application Compression from Computer Concepts and three sprites in archived form to demonstrate the use of ArcFS and CfsReader.

ArcScan Data

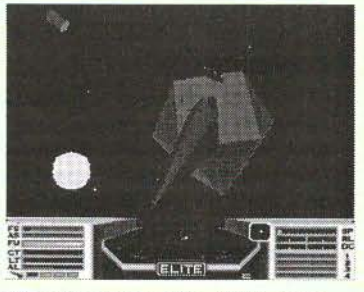
ArcScan indexes for this issue of RISC User and BEEBUG Vol.10 No.6.

Shells: Test Your Aim with this Cannon Game

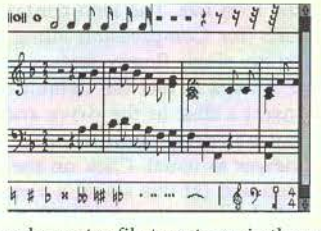


An entertaining one or two player game, in which each player tries to launch a missile over a mountain range so that it hits the opponent. Good will to all men!

RISC OS 3 and Elite Screendumps



Two screendumps from the A5000, and a screenshot of the Archimedes version of Elite from Hybrid.

The 12 Days of Christmas - Maestro Tune

A seasonal maestro file to get you in the mood for Christmas.

a selection of bonus items for only £4.75

File Compression

Mike Williams reviews Compression, a new application from Computer Concepts, and compares it with an updated version of ArcFS from David Pilling.

The purpose of any file compression utility is to squeeze a file so that it occupies less space, useful for conserving limited disc space, and for economising on file transfer by modem and telephone line. One such system, widely used, is Spark available from David Pilling. Its counterpart is ArcFS, which is a read-only filing system for accessing files compressed with Spark.

Now Computer Concepts has entered this field with a sophisticated offering in the form of Compression. At the same time, David Pilling has also released an enhanced ArcFS system (with read and write options), using an improved compression technique, but still maintaining compatibility with Spark. We shall see how these compare.

COMPRESSION

At its simplest Compression will compress any file, thus saving space and enabling more files to be stored per disc. However, Compression appears to the user as a filing system, which makes the whole process of squeezing files, and their subsequent access, largely transparent to the user.

The package consists of a single disc and a 24 page manual. Double clicking on the CFS application from the Compression disc installs a pseudo disc drive icon to the left of the icon bar. The icon contains the letters CFS (for Compression Filing System), and on my single floppy system, labelled 'ADFS 0' This is in fact the default configuration. Insert a disc in the drive and click on the normal drive icon to open its directory viewer as usual. Click on the pseudo drive icon and (at this stage) a virtually identical window appears, but with a filing system name of 'CFS#ADFS' at the start of the pathname.

To compress any file, all that is required is to drag the file's icon from a directory viewer into that headed CFS#... If the file already exists in the corresponding directory it is compressed; if it is not present it is copied and compressed.

One point I found confusing for quite a while is that a compressed file shows its normal icon in the Compression viewer, but a standardised 'Compress' icon in the normal directory viewer. This initially seemed the opposite of what I expected. The logic is that you would normally use the Compression viewer where the correct icons are then meaningful, as the same actions can be performed on the compressed versions as would normally be performed on the full versions. However, uncompressed files show as their normal icons in both directories.

The philosophy behind the approach is that you would store all relevant files in compressed format. All subsequent actions would be performed with Compression loaded looking only at the Compression directory viewer. All normal Filer actions can be performed, and applications double-clicked just as though a normal directory viewer were in use. In practice that is just how it seemed.

Compression is also supplied with a read-only version of the system so that users of Compression can pass on compressed files to friends and others, complete with the facility to use the compressed file directly (but without the facility to compress their own files). CC say this read-only version may be freely distributed.

Furthermore, Compression can be customised to suit the user's system and the way in which it is configured. This is

particularly relevant for second floppy drives and hard disc drives (CC says Compression will support SCSI and IDE filing systems, as well as RAMFS, NFS and Econet). The compression process also uses a temporary file, and the users can position this on a hard disc or in a RAM disc to speed up compresssion, and decompression.

ARCFS

ArcFS, written by Mark Smith and supplied by David Pilling, is also a filing system. It works by allowing the user to create an Archive directory on any disc. Any file dragged into this directory will be saved in compressd format. As with Compression, provided ArcFS is installed, and this happens automatically by double-clicking on an Archive directory, the contents of this directory are displayed and appear as normal. Double-clicking or any other normal action (such as dragging a sprite file into a DTP document) will automatically decompress the file.

Unlike Compression, there is no need to customise the software to the user's system, and the distinctive Archive icon makes such directories easy to recognise. ArcFS also has the advantage that it will access files compressed with Spark, and a lot of PD software is supplied in this format. Like Compression, ArcFS also provides a read-only module for onward distribution with compressed files. However, if an Archive file becomes corrupted on disc, then all the files within it will be lost, compared with Compression where at worst no more than one file will be affected.

So, Compression all works very nicely, and with virtually no change to normal Desktop usage. ArcFS also performs in exemplary fashion with its own distinctive style. But is it worthwhile? What savings can be achieved by compressing a file, and are there any overheads in increased compression or access time? And finally, does Compression justify its price tag of nearly £60?

Compression techniques used by software rely on identifying repetitive patterns which can be represented more concisely. It thus works best with sprites or similar files, and is better for long rather than short files because of an extra overhead introduced by using compression. It is clearly difficult to give definitive comparisons, but Table 1 shows the results of using Compression and ArcFS with a range of different file types. The results are generally very similar, though ArcFS was apparently better at compressing Inpression files!

Filetype	Average size Uncompacted	Average size Compression	Average size ArcFS
Sprite	234,520	38,920 (83.4%)	39,060 (83.3%)
Draw	11,043	6,016 (45.5%)	6,519 (41.0%)
Text	12,610	6,022 (52.2%)	6,585 (47.8%)
Basic	25,684	12,707 (50.5%)	13,096 (49.0%)
Ovation	55,970	24,474 (56.3%)	24,972 (55.4%)
Impression	49,972	31,128 (37.7%)	16,860 (66.3%)
Pipedream	17,479	5,646 (67.7%)	6,168 (64.7%)

Table 1. Effect of file compression on different file types showing the degree of compression achievable in each case

Astfar as speed is concerned, I did not feel that the time to compress/copy a file or to access a compressed file took significantly longer than normal with either package, though it will clearly occupy a small amount of additional time (CC quote from 0 to 6 seconds). However, it is worth pointing out that Compression was consistently faster (by a factor of 2 on average). On the whole, this seemed of much less importance.

CONCLUSIONS

Consider carefully whether any compression program will be of benefit to you. If you have a large collection of clip art, maybe data files, then significant savings can be made. If you use a hard disc then you may feel you have more than enough space, but clip art can rapidly use this up, and the facility to squeeze this means such a library

Continued on page 68

LEARNING FOR LIFE . . .

In the beginning there was Logotron Logo – and from that first success – now established as a national standard, Longman Logotron has moved on . . .

With well-known programs such as PENDOWN, REVELATION and MAGPIE, we have provided specifically designed software to make the fullest possible use of the features on Acorn Archimedes computers in primary, secondary schools and in homes throughout the country. Programs which let the pupil take charge of the computer and put creativity into the classroom.

Longman Logotron also recognises the importance of the National Curriculum. Our software provides the tools you need to use computers effectively across the curriculum.

PENDOWN is an intuitive and accessible wordprocessor. REVELATION is a superb image processor and MAGPIE allows pupils to create computerised 'binders' to present information in sound and music as well as words and pictures.

But this is only the start . . . We are committed to expanding our range and will soon announce two new programs – PINPOINT and EUREKA.

We know these names will be as familiar as the others in no time.

All our software has a low threshold and a high ceiling – easy for beginners but powerful enough to stimulate the most experienced user.

Our programs are designed to grow with the individual, at his or her own pace.

Longman Logotron quite simply delivers the tools that offer you learning for life.

Find out more about Longman Logotron's Learning for Life . . .

For prices or for further information please contact Longman Logotron today on . . . (0223) 425558

LONGMAN LOGOTRON

124 Cambridge Science Park
Milton Road, Cambridge CB4 4ZS
Telephone (0223) 425558
Facsimile (0223) 425349

Into the Arc

The Flexibility of the Archimedes (Part 2)

Alan Wrigley looks at the various configuration settings that are possible on the Archimedes.

Last month I covered the use of the Task Manager to allocate memory for various purposes, and I mentioned that configured values could be set by the user, so that each time the computer is switched on or reset, these values would take effect. The command which allows you to do this is **Configure*. In fact, you can configure much more than just the memory allocations, and the main purpose of this article is to look at some of these other configuration options. Acorn has provided an application on Applications disc 1, called *Configure*, which enables you to set many of the configurations. For some, such as mouse speed and Wimp flags (both of which are described later), the Configure application is the best way to set the configurations.

The reason all these settings are preserved while the computer is switched off is that they are held in an area of non-volatile CMOS RAM, powered by the batteries that you will find inside your Archimedes. Needless to say, if the batteries become flat, you will lose any configuration settings. If this should happen, the factory settings can be restored (see below).

To see the full range of possible options, press F12 to get to the command line and type:

```
Status
```

whereupon the currently configured value for each option will be shown. The *User Guide* has a whole chapter describing all the standard options, and you should read this thoroughly. You may find that your computer lists options which are not described in the *User Guide* - these may be configuration options which have been added to the list by extension modules. For example, the outline font manager adds a number of *Fontmax* configurations. A description of these was given in *Technical Queries* (RISC User Volume 3 Issue 4). Another example would be a network filing system, which will add configuration options for the fileserver and printer server numbers.

On the whole, the defaults chosen by Acorn, which are present when the computer leaves the factory, are sensible ones. However, as explained last month, the flexibility of the Arc is one of its strengths, and inevitably many users will find that for their particular requirements, one or more of the defaults will need to be changed. In some cases, adding certain hardware items, for example a hard drive or a multi-sync monitor, will necessitate a change to the configured settings.

FACTORY DEFAULTS

The factory default settings can be restored at any time by switching on the machine with either the R key or the Delete key held down (the difference between the two is that an R power-on preserves the settings for *Floppies*, *HardDiscs* and *Country*). In case this should ever be necessary, or for that matter in case the batteries should expire, it is a good idea to save your own preferred settings somewhere. The simplest way is to spool the list to a file. Go to the command line, type:

```
Spool <filename>
```

followed by:

```
Status
```

and when the list is complete and the star prompt appears again, type:

```
Spool
```

to close the file. The resulting file can be read with Edit and provides a reference of the configuration settings for future use. A more sophisticated way to save the settings is to use the RISC User *CMOS RAM Editor*

from the Volume 3 Issue 6 disc. This application also offers an insight into the way in which the configuration settings are stored in the CMOS RAM.

Some of the configuration options are more useful than others, and there is insufficient space to cover everything in this article. The *User Guide* has a detailed description of each option. However, it is worth looking in greater detail at some areas which can cause confusion, particularly for beginners.

DISC DRIVES AND FILING SYSTEMS

There are configuration options for the number of floppy discs (*Floppies*), the number of hard discs (*HardDiscs*), the default drive (*Drive*) and filing system (*FileSystem*). These will normally be set at the factory to suit the machine being produced, but if you add a hard drive to a machine that did not previously have one, or if you replace an ADFS hard drive with a SCSI one, you will not be able to use them until you have altered the configured settings, because your Arc will simply not know that they exist. In other words, if you have no hard discs configured, then no hard drive icon will appear on your icon bar. So you go to the command line, type:

```
Configure HardDiscs 1
```

and return to the Desktop expecting to see a nice new icon on the icon bar. But it isn't there! This is because most of the configuration settings only take effect after the next reset or power-on. So to register your new setting, you must press Ctrl-Break (making sure of course that you do not have any unsaved data on the Desktop).

The next problem that many users find is that, having got a hard disc, they want a boot sequence to be run automatically when the computer is switched on (see *Creating a Boot Application* in Volume 4 Issue 5). Having created the application, and configured the Boot setting (by typing **Configure Boot*), everything should work correctly. But all that happens is a "Drive empty" error that flashes briefly on the screen. The problem here is that the default drive, i.e. the one which will be searched for a !Boot file or application, is still configured to 0. It is necessary therefore to configure Drive to 4 if you want your hard disc to be the default (assuming it is drive 4 on your system).

MEMORY ALLOCATIONS

I described these in some detail last month. In most cases, the default configurations can be left as they are, since the Task Manager arranges the allocation of memory dynamically to suit the current environment and the requirements of the active tasks. However, two of the memory allocation settings are important, since they remain static unless altered by the user. These are the font cache (*FontSize*) and the RAM disc (*RamFsSize*). For example, if you want a font cache of 128K and a RAM disc of 64K, you would use the following configuration commands:

```
Configure FontSize 128K
Configure RamFsSize 64K
```

As explained last month, the size of the font cache can have a significant effect on the speed at which an application which uses fonts will work. As for the RAM disc, it is entirely a matter for the user to decide whether this needs to be available at power-on, and if so what size is required. If you only use a RAM disc infrequently, it is not worth having one configured.

ENVIRONMENT

A further set of configuration options determines the environment in which the computer will operate. For example, *Country* sets the appropriate keyboard and alphabet for the configured country (see *Going International*, Volume 4 Issues 7 & 8). *MonitorType* determines which type of monitor the computer will expect to find connected (normal, multi-sync, VGA etc.). For example:

```
Configure MonitorType 1
```

will set multi-sync as the default.

A further option, *Language* has nothing to do with foreign languages, but refers to the

computer's own internal "language" which will be entered at power-on, i.e. the Desktop, Basic or the command line. The term is a hangover from BBC days, when it was normal for a computer language, such as Basic, to be the standard environment. This idea persisted with the Arthur operating system on the Arc, but under RISC OS the Desktop is the more usual, and more practical default language. In case your machine gets re-configured at any time, it is useful to know that the parameters are 0 for the command line, 3 for the Desktop and 4 for Basic.

USER PREFERENCES

The final set of configuration commands to be considered are those which are termed "user preferences". In other words, they are options which control such things as the visual and audible results obtained when performing certain actions.

Boot has already been mentioned - this determines whether a file or application is automatically run when the computer is switched on or reset. The article on this subject referred to earlier is worth reading if you are not sure how to make use of this option. If you don't want automatic boot operation, the opposite configuration is *NoBoot*.

The loudness and nature of the sound from sound channel 1 can be altered with the *SoundDefault* option. This affects among other things the beep character which is produced when you press the Copy key outside the Desktop, or when an error box is displayed by the Wimp, and so on. If you don't like the rather watery sound from the WaveSynth-Beep voice, you can change it to one of the other voices available. **Configure SoundDefault* takes 3 parameters: the first determines whether the internal speaker is on (1) or off (0), the second sets the volume (0-7), while the third specifies the voice which will be assigned to channel 1 (to find out what voices you currently have, type *Voices). So to set the beep to StringLib-Hard at reduced volume, try the following:

```
Configure SoundDefault 1 4 5
```

WimpFlags is a useful option. If you have not altered this from its factory default value of 0, then you will notice that when you move windows around the screen or re-size them, or when you drag a window's scroll bars, the mouse takes a dotted outline of the window or scroll bar with it, but the window is not redrawn until the mouse button is released. I personally find this inconvenient; for example, when using the scroll bar to scroll through a long text document quickly, I want to see where I am in the text as I scroll. To achieve this, configure WimpFlags to a value of 15, which will result in windows being redrawn as they are moved, re-sized or scrolled. The downside of this is that the speed of movement can be considerably reduced, particularly if there are other windows that need redrawing as a result, but I consider this to be a small price to pay.

Similarly, you may find that the default setting for *MouseStep* is not to your liking. This determines the distance moved by the pointer for any given movement of the mouse. The default value is 1, which is rather slow, and if you have little room on your desk it can mean you having to lift the mouse and reposition it several times when moving from one side of the screen to the other. You can configure any value from 1 to 127, but the most useful settings are probably 2 or 3. However, if you work in a wide screen mode, such as mode 16, you may find 4 or 5 more suitable. By all means experiment with the highest values, but you will find them impractical - at 127, it requires about 2mm of mouse movement to move the pointer from one side of the screen to the other!

The purpose of these two articles has been to demonstrate that there are many ways in which your Arc can be made to provide a more suitable working environment for you, or to cope efficiently with a number of different tasks each with conflicting needs. The message is: don't soldier on with someone else's choice of settings if they are not appropriate for you. RU

C Notebook

C Hints and Tips compiled and linked by Lee Calcraft

This month we have 'stolen' a page from ANSI C, so as well as Hints and Tips, we have the space to take a brief look at the very useful C Toolkit from David Pilling.

HUNGARIAN NOTATION
by Mark Radford

The Hungarian notation is popularly used in commercial C programming to indicate variable types. It uses a lower case prefix followed by a mixed upper and lower case name. Here are some examples:

i	signed int e.g. iHorizScale
u	unsigned int e.g. uBitFlags
c	char. e.g. cInput
s	char string - not zero terminated
sz	char string - zero terminated
a	array e.g. aiTempMult100
p	pointer (prefix with type) e.g. ipVal

Although the use of upper case is incompatible with RISC_OSLib conventions, a compromise could be adopted. For example i_horiz_scale might be used in place of iHorizScale, say.

DISPOSING OF txtedit OBJECTS
by Lee Calcraft

If you are using the *txtedit* suite of functions, make sure that you dispose of all unwanted *txtedit* objects with *txtedit_dispose()*. If you use the lower level function *txt_dispose()*, all will appear well, but unexpected behaviour will result. For example, you will be told that your editor contains more unedited windows than you thought it should whenever you try to quit.

calloc() AND malloc()
by Mark Radford

Those who use *malloc()* to allocate memory on the fly might sometimes find that the lesser known *calloc()* would be a better bet. This behaves just like *malloc()*, except that the allocated area is filled with zero bytes. Even if this is not a specific requirement of your program, it can be a useful safety measure - especially when the area is being used for null terminated strings.

calloc() has the following prototype:

```
void *calloc(size_t n, size_t size);
```

DDE INSTALL PLUS IDE WON'T GO
David Spencer

The auto installer supplied with Acorn's new DDE suite fails when confronted with disc filing systems other than ADFS or SCSI.

DDT PLUS !CC WON'T GO
David Spencer

There is a nasty bug in the new DDE suite which can cause problems when trying to debug C programs with DDT. On trying to run the target program, the screen clears, and you are presented with a list of not too helpful error information.

The problem is caused not by DDT itself, but by the C compiler, which can sometimes produce corrupted debug data. There is no cure other than to use assembly language debugging only. But thankfully, as the target program is developed and altered, the bug seems to vanish as suddenly as it appeared.

EXTRACTING LEAFNAMES WITH strrchr()
Lee Calcraft

The useful C function *strrchr()* can be used for deriving the leafname from a full pathname. It takes two parameters: the pointer to a string to be examined, and the character which it is to search for. It returns a pointer to the first occurrence of the target character (starting from the *end* of the string), or NULL if there are no finds.

By searching a pathname for a full stop ".", you can find the starting point of the leaf string. The following function returns a pointer to the leafname, or NULL if no full stop is found:

```
char * get_leaf(char *pathname)
{
  char *cp_dot=strrchr(pathname,'.');
  if (cp_dot) return cp_dot+1;
  return NULL;
}
```

Please send your C Hints to the editorial address

David Pilling's Toolkit

This disc, which costs just £5.99 including VAT and p&p, contains 22 programs written in C, complete with documentation and C source code - though you will need SparkPlug (Public Domain also from David Pilling) to de-archive the latter.

Most of the programs are utilities of one kind or another, originally written for UNIX; though there are one or two oddball additions, including a banner text printer, and a calendar generator. The most useful of the utilities are listed in the table; and as you can guess from the names, some of them, are of use outside the world of C.

grep	Multiple file string-search
awk	Macro driven file editor
slint	Small 'lint' C source checker
sed	Stream editor
sort	Sort file
fc	File compare
pp	Pretty printer
xc	Cross referencer
cdecl	C declaration explainer
calls	Shows calling order of C funcs
sim C	Source similarity spotter

Table 1. Selected items from C Toolkit

Each is command line driven, so you must hit F12 or use the Task Manager to run them. This involves giving the command name followed by various arguments, often including the names of input and, optionally, output files. This only works, of course, if you have registered the path to the utilities in one of a number of ways. The best is either to put them in your library - or to register the parent directory of the suite of files using Run$Path.

In the relatively short space available here, it is impossible to do any justice to this fully packed disc, so I will try to give some idea of what the more useful, or more obscure, utilites achieve.

GREP AND AWK

As with many of these utilites, the names of this pair come from UNIX where brief cryptic names are *de rigeur*. *grep* stands for General Regular Expression Parser. In spite of this, it is a very handy utility to have around. Essentially it will search a number of files for particular patterns of characters, and is ideal for searching a set of source files for the occurrence of a particular function call or variable.

awk (which stands for Aho Weinberger Kernighan, after its authors) evolved from grep, and works in a broadly similar way, except that you can specify changes which can be applied at each find.

C SPECIFIC UTILITIES

There are some very handy ones in this group. *pp* reformats C source into an output file (or printer stream) ignoring existing formatting, and using VDU 9 (Tab) for each level of nesting. *xc* will cross reference function calls (though *cxrf* on David Pilling's *GNU Tools* #2 disc is said to be better). *calls* displays the calling sequence of all the functions in a source, using indenting for different levels of nesting. *sim* attempts to spot fragments of code from one source used in another, while *slint* is a primitive *lint* - designed to scan your source for errors or redundancies.

Finally, the very handy *cdecl*: this will translate complex C declarations into English, and *vice versa*. For example typing

```
explain int * b[10]
```

gives

```
declare b as array 10 of pointer to int
```

while entering

```
declare b as pointer to array 10 of int
```

gives

```
int (* b)[10]
```

Product	*C Tools*
Supplier	*David pilling, PO Box 22, Thornton Cleveleys, Blackpool FY5 1LR*
Price	*£5.99 inc. VAT & pp*

Other discs of interest to C programmers include *More C Tools*, *GNU Tools* #1, *GNU Tools* #2, and *U Tools*.

A copy of cdecl is included on this month's disc.

RU

WP/DTP:

Creating a Fold-out Leaflet

by R.H.Cumming

During the course of my work, I occasionally need to produce publicity information. Instead of the usual A4 double-sided page, I decided to polish up the presentation with some of the facilities offered by a DTP package, in my case Ovation. It took me quite a long time to perfect the brochure, largely due to problems in printing whose solution seems so obvious now. Perhaps this short article will help other readers avoid making the same mistakes.

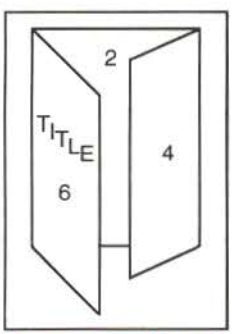


Figure 1. Style of folding

The style of the document is probably familiar to readers (see figure 1), and the layout for this is shown in figure 2. It is evident that you need two pages each with three equal columns. The narrative text will start in the left-hand column of the first page (column 1 in the figure), and flow through the columns to the left column of the second page (column 4 in the figure). Text can overflow into the middle column of page two if desired, but space needs to be reserved for any addresses and telephone numbers in this column. Column 6 will be the front page when the leaflet is folded up (after photo-copying), and hence is reserved for the title.

GETTING STARTED

On my A3000 2Mbyte machine I would normally set the font cache to 128K (to allow rapid access to the fonts), and load up the relevant printer driver and Ovation. Clicking the Menu button over the Ovation icon bar icon opens up a menu from which you can choose *New document*. Within the resulting sub-option window you need to select:

Portrait orientation
6mm borders for left, right, top and bottom margins
Three column layout with a gutter width of 10 mm

Portrait orientation and three columns are, of course, essential; the other choices may be varied to suit personal preferences. I have found that if the margins are less than about 6mm, inaccuracies in paper alignment in the printer become evident (I have an old Amstrad 2000 DMP). A gutter width of about 10mm is needed to ensure that the text is far enough away from the folds of the completed document. When you are happy with this selection click on 'OK', and a three column Ovation document will be opened.

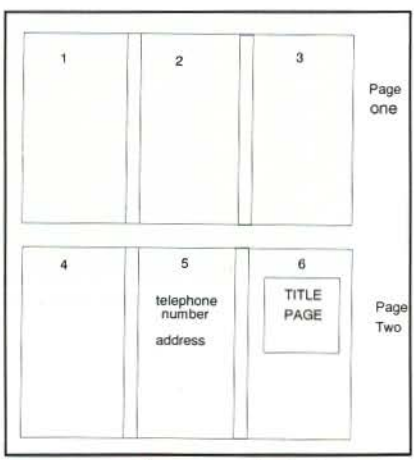


Figure 2. Three column leaflet layout

SETTING UP THE PRINTER

This was my biggest problem during earlier attempts. Clicking Menu over the printer icon displays a menu from which you can select *Page size*. You need to change the paper orientation to landscape, **and** change the paper limits or graphics area. This, I have found, works reasonably well if all printer margins are set to 1mm less than the page size set in the Ovation menu - in this case use 5mm all round. Click 'OK' in the printer menu to return to the Ovation document you are working on. The final stage of setting up the printer is to select from the Ovation main menu the *File* option and then *Printer setup*.

Select landscape orientation from this as well. Now select *View* from the main Ovation menu, and then *Show printer margins*. If you have set things up correctly you should find that your text area neatly fits within the grey printer margins now shown, assuring you that all will be printed.

ENTERING TEXT

This is really the straightforward part, starting in column 1 of course. For the phone number, don't forget that there is a collection of phone symbols (dingbats) on the Ovation Clipart disc for that little professional touch. For the title page I tend to use large print in a framed text border, with a picture (from Draw). I find it better not to use too many font styles to keep the appearance uncluttered.

PRINTING THE DOCUMENT

I have tried two methods:

1. Dot Matrix Printing: Here the trick is to align the paper accurately under the ribbon. If you don't, you may find that the left-hand margin is of different width to that on the right. You also need to use continuous stationery, or the printer will refuse to print the right-hand edge of the leaflet. Instead, it bleats gently indicating "out of paper".

2. PostScript Printing: Using the article by Mike McNamara in RISC User Volume 3 issue 7, I was able to print the documents to a disc file by loading the PostScript printer driver (PrinterPS), remembering to set the margins etc. for the printer, and transfer the resulting PostScript file to an MS-DOS disc using the PC emulator as he described. The results of the PostScript printing, which was done at work, were excellent. I have since used *PCDirect* to effect the transfer from ADFS to MS-DOS. This route is highly recommended as it is so simple.

To help with the folding, it is possible to draw a fine line, with the Ovation line drawing tool, at exactly one third of the way along the sheet (e.g. at 99mm and at 198mm). These serve as indicators for obtaining a neat fold.

I have not attempted to print directly the two sides back to back, but rather do this at the photo-copying stage; it is easier to get the alignment right.

I have now produced numerous information leaflets, in English, French, and in German, and recommend all readers to consider this method of information presentation. RU

Pipedream 4 (continued from page 23)

porated into a document simply by dropping its icon onto the window. It will be drawn at the caret position, and can be scaled to fit.

When a file is saved, its window size and position, and the caret position are saved too; so if, like me, you like the icon bar to be exposed you can set your template file to appear at the correct size and it always will. If you leave a job while you were working in the middle of it, and re-load it later, it will open at the place you left it. A less obvious advantage this offers is when including PipeDream documents in a Genesis application, so the file can always appear at a pre-set size and position and with the right bit showing.

CONCLUSIONS

In a review of this length it is almost impossible to do PipeDream 4 justice. It is friendly enough for beginners to get started with, and yet can quite adequately handle matrix arithmetic and complex numbers; it generates its own graphical output, and imports and exports cleanly with other applications; if your taste is for finance or statistics it has a very competent vocabulary to handle these; it can sort data in numerical form or alphabetical, and will even keep paragraphs intact when sorting on their opening word. Obviously it is possible to get yourself muddled as you learn to use PipeDream, but Colton has a proven track record of customer support and take your questions as seriously as you do.

Product	*PipeDream 4*
Supplier	*Colton Software* *2 Signet Court, Swanns Road,* *Cambridge CB5 8LA.* *Tel. (0223) 311881*
Price	*£230.30 inc. VAT* *Upgrade from PipeDream 3* *£94.00 inc. VAT* *£58.75 inc. VAT (if purchased after 1st August 1991)*

RU

CalcSheet

The new spreadsheet for the Archimedes
Only £99.00 + VAT

Main features

* Very powerful, yet easy to install and use.
* Fully RISC-OS compatible, with intuitive keyboard short-cuts.
* Very compact code written entirely in C (see below).
* Sophisticated space saving techniques to optimise the use of memory and disc space.
* Spreadsheet default size 1000 columns by 9999 rows.
* Has over 80 built-in functions of all types.
* Built-in graphing facilities (bar, stacked bar, pie, line etc).
* Comprehensive manual.
* Timed autosave and macro facilities (including a learn option).

CalcSheet was designed specifically for multi-tasking on a 1M or single drive machine. CalcSheet will run on any Archimedes (or BBC A3000) with at least 150k free after loading the Shared C Library and Floating Point Emulator. CalcSheet does not use overlays or require the computer to be specially configured.

The comprehensive range of available functions should satisfy the needs of most potential users.

Available from Sept 1st 1991, for further details contact:

Trail Software, P.O. Box 283, London,
SW11 2LL. Tel 071-924-4880

Payment by cheque only (cheque to accompany order).

Exploiting the Wimp

Part 2: Idle events, and Redrawing Windows and Icons

by Mike Ironmonger

WIMP EVENT MASK

Central to every Wimp task is its polling loop, and one of the features of polling is that reason codes which a task isn't interested in can be masked out. This helps maintain the speed of the Desktop by ensuring that the Wimp doesn't waste time returning control to a task unnecessarily. This is especially true for the null reason code, which is returned to a task when no other reason code is applicable.

However, consider a clock that updates its display every minute. This needs to receive null reason codes so that it can keep checking the time, and update its display when necessary. The problem with this is that most of the time when a null reason code is received the clock won't need updating, so we're back to the problem of wasted time. The solution to this is a timed null reason code, which is what the call Wimp_PollIdle provides.

SYS "Wimp_PollIdle"

It performs exactly as Wimp_Poll, but requires an extra parameter that specifies the earliest time that a null reason code will be returned to the task. This time is passed in register two and is of the type returned by OS_ReadMonotonicTime (the number of centi-seconds since the last hard reset). The phrase 'earliest time' is important because the null reason code may be returned much later than the 'earliest time' if, for example, the user presses F12 and goes into the command line.

When the task does receive the null reason code it should perform the appropriate action and then increment the previous earliest time, in the following fashion:

```
SYS "OS_ReadMonotonicTime" TO newtime%
WHILE (newtime%-earliest_time%)>0
earliest_time%+=increment%
ENDWHILE
```

The increment is specified in centi-seconds (100=one second) and the new value of *earliest_time%* should be used in the next call to Wimp_PollIdle. To initialise the variable *earliest_time%* you also need the following two lines before the polling loop:

```
SYS "OS_ReadMonotonicTime" TO earliest
_time%
earliest_time%+=increment%
```

Of course, this call isn't just restricted to clocks, it can be used for any regular event. For a good example of it in use, see Lee Calcraft's *Desktop Caret Flasher* in RISC User Volume 4 Issue 9.

REDRAWING WINDOWS

The topic of redrawing a section of a window is a wide ranging one simply because of the infinite variety of information that can be displayed in a window. In part 16 of *Mastering the Wimp* Lee Calcraft covered the redrawing of lines of text, and mentioned the redrawing of graphics via a sprite. I'm now going to cover two other types of redrawing, but first I want to present a redraw procedure that caters for any number of windows.

The procedure is called *PROCredraw_window* and it should be called whenever a task receives a reason code of 1. After the procedure calculates the window's work area origins as usual, a CASE statement checks which window is being redrawn and calls the appropriate redraw procedure. This procedure then performs the actual redrawing and looping to obtain each rectangle which needs to be redrawn.

Two examples of these redraw procedures are *PROCredraw_colours* and *PROCredraw_objects*, both of which are described below. They redraw a window of 512 OS units square with the work area origin at the top left of the window. As an

exercise, you should be able to create these windows using FormEd. Then save them in a template file, load them with the routines presented last month, display them, and redraw them using PROCredraw_colours and PROCredraw_objects.

GRID REDRAWING

This is a technique used for redrawing things like chess boards and crosswords - basically any two-dimensional array of items of the same size. The procedure PROCredraw_colours demonstrates the principle and the required code by redrawing a simple 8 by 8 grid of coloured blocks.

To redraw a rectangular section of a window there are three steps:

1) The x and y origin of the work area (xo% and yo%) are subtracted from the co-ordinates of the redraw rectangle. This gives us the co-ordinates of the redraw rectangle relative to the work area origin.
2) These are then divided by the size of the grid (64 in the listing) to give us the range of blocks that need to be redrawn. Steps 1 and 2 are actually performed in a single line for each co-ordinate of the rectangle - left, bottom, right, and top.
3) Two nested FOR/NEXT loops then cycle through the x and y ranges and redraw the colour blocks.

OBJECT REDRAWING

Up to now, discussions about redrawing have concentrated on windows that display information in a uniform manner - in lines or arrays. The opposite of this would be a window displaying a Draw file. This could contain a variety of objects spread about at random, and it would appear at first sight to be very difficult to redraw this efficiently. However, with a technique known as source level clipping it becomes quite easy. The principle is straightforward enough - when a rectangle has to be redrawn, each object is checked to see if it intersects the rectangle; and if it does, it's redrawn.

This is OK for rectangular objects but for circles, triangles and odd shapes the intersection calculations would become very complicated. The simple solution to this is to calculate the smallest rectangle that can contain the object, and then use this to check for the intersection.

The procedure *PROCredraw_objects* shows an example of this technique - it redraws a circle, a square and a triangle in a window. There are basically only two steps involved in this:

1) The x and y origin of the work area (xo% and yo%) are subtracted from the co-ordinates of the redraw rectangle. This gives us the co-ordinates of the redraw rectangle relative to the work area origin.
2) Each object is then checked to see if it intersects the redraw rectangle, and it's redrawn if it does. The function *FNin_redraw_rectangle* is used to check for the intersection. It requires four parameters - the left, bottom, right, and top edge of the rectangle that contains the object, and it returns the value *TRUE* or *FALSE*.

TITLE REDRAWING

Of course, as well as simply responding to redraw requests, most tasks also need to initiate redraws themselves. One example of this is the redrawing of a window's title when, for example, a document is saved under a new name. Because the title is outside the window's work area, the usual form of Wimp_ForceRedraw can't be used.

The best way around the problem is to call Wimp_ForceRedraw using a window handle of -1. This forces a nominated section of the screen to be redrawn - in this case the section where the window's title is located.

The procedure PROCretitle uses this technique. It requires two parameters - the window's handle and the new title for the window. To get all the details of the window, it first calls Wimp_GetWindowInfo. It then checks if the window's title is indirected and reports an error if it isn't (since you cannot alter non-indirected titles). Otherwise it inserts the new title and, if the window is on

screen, it calls Wimp_ForceRedraw to redraw the title, calculating the co-ordinates of the title from the position of the window.

ICON REDRAWING

Another item which often needs updating is the icon - typically when a program alters the text in an indirected icon. Using Wimp_ForceRedraw to redraw an icon is a bit long-winded because it requires a call to Wimp_GetIconInfo to obtain the bounding box of the icon. Fortunately, the call Wimp_SetIconState is a much simpler alternative. As its name suggests, the purpose of the call is actually to change an icon's flags, but it also redraws the icon to reflect its new state. It requires a single parameter in register zero which points to a block of memory containing the following information:

block+0	window handle
block+4	icon handle
block+8	EOR word
block+12	clear word

The call changes the icon's flags as follows. First, any bit set in the *clear word* will clear the corresponding bit in the *flag word*. Then, any bit set in the *EOR word* will invert the bit in the *flag word*. A combination of these allows each bit to be either preserved, set, cleared, or inverted. After changing the flags the icon is redrawn in its new state.

The procedure PROCset_icon_state gives easy access to the call. It requires four parameters - *window handle, icon handle, clear word* and *EOR word*. Note that the order of the *clear word* and the *EOR word* have been reversed from the actual call to a more logical order.

Because all 32 bits of an icon's flag are alterable, the changes you can make to an icon's state are almost limitless. You could, for example, make an icon un-selectable when an operation starts, and cancel this when the operation is completed. You could also change an icon's colour to indicate different situations. For full details of all the flags I refer you to pages 1181 to 1183 of the PRM. However, if you simply want to redraw an icon without changing its state, as was the original intention, use 0 for both the *clear word* and the *EOR word*.

On this month's disc is the application *!WimpDemo* which makes use of all the techniques and routines described in this article. Next month I will look at menus, and the use of the caret in writable icons.

```
  10 REM            >ExWimp2
  20 REM Program    Wimp procedures
  30 REM Version    A 1.0
  40 REM Author     Mike Ironmonger
  50 REM RISC User December 1991
  60 REM Program    Subject to Copyright
  70 REM            Not Public Domain
  80 :
  90 DEFPROCredraw_window
 100 SYS "Wimp_RedrawWindow",,block% TO
more%
 110 xo%=block%!4-block%!20
 120 yo%=block%!16-block%!24
 130 CASE !block% OF
 140  WHEN handle1%:PROCredraw_window_1
 150  WHEN handle2%:PROCredraw_window_1
 160  REM etc.
 170  REM etc.
 180 ENDCASE
 190 ENDPROC
 200 :
 210 DEFPROCredraw_window_1
 220 WHILE more%
 230  <insert redraw code here>
 240  SYS "Wimp_GetRectangle",,block% T
O more%
 250 ENDWHILE
 260 ENDPROC
 270 :
 280 DEFPROCredraw_colours
 290 WHILE more%
 300  left%=(block%!28-xo%)DIV64
 310  bottom%=(yo%-block%!32-4)DIV64
 320  right%=(block%!36-xo%-2)DIV64
 330  top%=(yo%-block%!40)DIV64
 340  FOR Y%=top% TO bottom%
 350  FOR X%=left% TO right%
 360   SYS "Wimp_SetColour",(X%+Y%)MOD1
6
 370   RECTANGLE FILL xo%+X%*64,yo%-Y%*
```

```
64-4,62,-60
  380  NEXT,
  390  SYS "Wimp_GetRectangle",,block% T
O more%
  400 ENDWHILE
  410 ENDPROC
  420 :
  430 DEFPROCredraw_objects
  440 WHILE more%
  450  left%=block%!28-xo%
  460  bottom%=block%!32-yo%
  470  right%=block%!36-xo%-2
  480  top%=block%!40-yo%-4
  490  IF FNin_redraw_rectangle(4,-168,1
64,-8) CIRCLE FILL xo%+84,yo%-88,80
  500  IF FNin_redraw_rectangle(160,-320
,320,-160) RECTANGLE FILL xo%+160,yo%-32
0,160,160
  510  IF FNin_redraw_rectangle(306,-508
,506,-308) MOVE xo%+306,yo%-508:MOVE xo%
+506,yo%-508:PLOT 85,xo%+406,yo%-308
  520  SYS "Wimp_GetRectangle",,block% T
O more%
  530 ENDWHILE
  540 ENDPROC
  550 :
  560 DEFFNin_redraw_rectangle(L%,B%,R%,
T%)
  570 =(L%<=right% AND R%>=left% AND B%<
=top% AND T%>=bottom%)
  580 :
  590 DEFPROCretitle(window%,title$)
  600 !block%=window%
  610 SYS "Wimp_GetWindowInfo",,block%
  620 IF ((block%!60) AND &100)=0 ERROR
1,"Title isn't indirected"
  630 $(block%!76)=title$
  640 IF ((block%!32) AND (1<<16))<>0 SY
S "Wimp_ForceRedraw",-1,block%!4,block%!
16,block%!12,block%!16+44
  650 ENDPROC
  660 :
  670 DEFPROCset_icon_state(!block%,bloc
k%!4,block%!12,block%!8)
  680 SYS "Wimp_SetIconState",,block%
  690 ENDPROC
```

RU

ARCHIMEDES ADDLIST

R.T.P. TECHNOLOGY.

VITAL SOFTWARE FOR SMALL BUSINESSES

! ADDLIST allows you to prepare invoices easily from a form prepared with 1st Word Plus. Drag the form into ! ADDLIST and enter the cost per unit , Select the VAT rate and the extensions and column totals are done for you. This saved me hours in my business and cut out all maths errors.
Return to First Word Plus to view the results.
Then print the invoices with confidence !
RISC OS Compatible. For all Archimedes Computers.
2 or 3 decimal places rounded accuracy Also accepts Text files or files from pre-RISC OS. 1st Word Plus.
Price £ 12.75 inc p&p
UK sales:- please add VAT. (total £ 14.98)
Export sales :-please add £ 1.00 for postage.(no VAT)
Payment refunded if not satisfied and diskette is returned within 30 days.
Order by post / Fax / Telephone. VAT receipt provided.
We accept cheques or Visa/Master/Euro Credit Cards
Available soon: PRODUCTION. Generates discs, labels receipts and sales records so you can start your own software distribution business ! Please enquire.
R.T.P.Technology , 3 Church Hill Road,
Tettenhall, Wolverhampton,WV6 9AT.
Phone 0902 756065. Fax 0902 751995.

Media Design Interactive are the premier content based multimedia developers for the Macintosh and PC platforms.
Due to the securing of a major development contract we are now seeking a

Senior Multimedia Author/ Programmer

The successful candidate will have in depth experience of the following

- Archimedes hardware
- C or Assembler
- Creating Desk Top applications
- Genesis II and Graphics software
- And must be able to accept responsibility for delivering on time and on spec

In return you will receive a remuneration package (including profit share) of around 20-25k while working for a company that cares about it's people.

If you think this the opportunity you've been waiting for you're probably right... Contact Philip Nash at MDI on 0252 344454

Media Design Interactive

Alexander House Station Road Aldershot GU11 1BQ

Keylink Prolog V2.0

For the Archimedes

Keylink Prolog uses the standard Edinburgh syntax making it suitable for use with a wide range of texts. It comes with its own 120 page tutorial/manual which has been developed especially for the first time Prolog user.

Keylink Prolog is a desktop application, fully integrated into the RISC OS WIMP environment with query and output windows, menu choices and pop-up dialogue boxes.

Keylink Prolog has fast loading and saving predicates which makes it suitable for use with large Prolog programs such as the Open University's public domain MIKE system for Knowledge Engineering and Expert System development.

Keylink Prolog uses approximately 600k of memory.

Keylink Prolog costs £69.95 + VAT (postage included).

Keylink Computers Ltd

2 Woodway House, Common Lane,
Kenilworth CV8 2ES. Tel/Fax: (0926) 50909.

IMAGINE

Micro User October 1991:

"Imagine is so good that ... it could well become the default art pack for schools." Includes unique **symmetrical painting, twin screens**, etc. 9 to adult - the ideal follow on from *TinyDraw.*

An easy-to-use menu driven art & design pack with lots of maths features too: £39.95 (inc VAT & site licence)

educational software

TinyLogo-TinyDraw

classic adventures

Special Xmas price £29.95 (inc VAT & free site licence)

"*TinyLogo* is a simplified Logo simulation with commands depicted as icons. *TinyDraw* is a simplified painting program offering full mouse-icon control... one that young children cannot really afford to be without." *T.E.S. January 4th, 1991*

Other best-selling Archimedes A3/5000 titles include: the **FREDDY TEDDY** series for infants (3 titles out now, 2 more on the way), **GIANT KILLER**, and new versions of: the **ART MACHINE PACKS 1 & 2**; **ASTRO**; **POLYOMINOES**; **WHALE FACTS**. And remember... we still produce *the best RISC OS* **classic adventures** inc. Peter Killworth's *Doom Trilogy, Philosopher's Quest, Hamil, Avon/Murdac & Acheton.* **COMING SOON** from Thackray & Partington: ***SPY SNATCHER***!

PO Box 39
Stilton
Peterborough
Cambs PE7 3RL

FREE CATALOGUE

TOPOLOGIKA

ACCESS
& VISA
tel & fax
0733 244682

The RISC OS Style Guide

Reviewed by David Spencer

Many readers will be familiar with Acorn's *RISC OS Programmer's Reference Manual*, in name at least. This is a massive four volume set that explains all the technical ins and outs of RISC OS, and is a vital reference work for the serious programmer. Of as much importance, but no where near so widely known, is another Acorn publication called the *RISC OS Style Guide*. The purpose of this book, which is only 78 pages long, is to define the standard style in which RISC OS applications should be written.

THE NEED FOR A STANDARD

Before looking at the style guide itself, we need to consider why Acorn should want to lay down a standard, and why programmers should follow it.

The entire concept of a desktop environment is designed to allow a new user to grasp immediately certain simple tasks, such as finding files, without needing to read many pages of manual. This is partly because the desktop concept is familiar to the user already, and partly because the ideas of moving a pointer and clicking are largely intuitive. It makes sense therefore, to carry on the ease of use and intuitiveness to all applications running within the desktop - and this means defining a standard.

By laying down a core set of standards for the way an application works and the way it is controlled, when a user sees the new application for the first time the whole appearance should be familiar, and if it features tasks that exist in one of his existing applications they should be controlled in roughly the same way.

ENTER THE STYLE GUIDE

Having said why some form of standard is desirable, how is it presented and what does it contain? The book is split into thirteen sections plus a glossary and index. The first two sections explain how to use the guide and the need for a standard, introducing the concept of a Graphical User Interface (or GUI). The third covers the all-important subject of terminology, which is vital when writing program documentation. It defines such things as the names of the mouse buttons and window parts, the actions that can be performed (such as *choosing a menu option*) and general terms like 'highlighted' and 'dialogue box'.

The next chapter lays down some general and fundamental concepts that programs should adhere to. These all centre around three aims: the package should be easy to learn, easy to relearn, and easy to use productively. Some of the guidelines include providing interactive help, allowing actions to be undone, warning before performing destructive operations, and making each action perform a simple task. On this latter point the guide says that most individual actions performed by the program should be describable using a noun-verb pair, such as 'File-delete'. This chapter also covers aspects such as using memory and other system resources sparingly.

The next seven chapters look in detail at particular aspects of the system. The first of these deals with screen handling; stressing that any program should be mode independent and should not rely on a particular set of screen dimensions. For applications that want to take over the entire screen, a mechanism is suggested for doing this without damaging the idea of multi-tasking more than is strictly necessary. This is similar to the method used by the new PC Emulator.

Colour and sound are the subject of the sixth chapter, not so much from a technical point of view, but from that of the user. The guide suggests that both should be used

sparingly so as not to give a 'cheap' appearance, and should only be used to reinforce information rather than to present it, as some people will only have mono monitors, or will have impaired hearing. It also warns that a significant number of users will be colour blind, and very few will be able to remember a particular musical note or tell the difference between two very similar ones.

Chapter seven reinforces some details about windows. For example, *Adjust-Close* should open the parent window if applicable, and *Shift-Adjust-Close* should do the same but not close the original. The next chapter looks at setting up application directories, in particular what they should contain and how they should be named. Information is also given here on using shared resources, and help on how to split large applications across more than one disc.

The next two chapters cover sprites and icons, and menus and dialogue boxes respectively. The first of these includes details for defining sprites and placing them on the icon bar. The section on menus covers their general appearance and how they should be displayed. There is much detail on dialogue boxes which starts by defining three types: *Ordinary*, which are leaf items of menus; *Detached*, which are part of a menu tree but opened by choosing a menu option; and *Static*, which are dialogue boxes that remain on the screen when the menu is cancelled. Each type is suited to a particular function, in many cases controlled by features of the Window Manager itself. For example, a static dialogue box must be used if a file has to be dragged into it, as this can't be done with a menu structure. The Style Guide defines the wording of dialogue boxes, the effects of key presses and the layout of standard boxes such as the query box.

The final chapter in this part of the guide handles input, either from the keyboard or mouse, defining standard key presses and methods of selecting objects. This is probably one of the most important sections as consistency of input techniques is vital to a new user.

The next section deals with the subject of editors - which in general are programs that take a file, edit it in some way, and save it again. This definition includes drawing and painting packages, as well as the more usual text editors. The final chapter contains technical details on implementing interactive help which was accidentally missed out of the PRM.

MEETING THE STANDARD

Obviously it is not possible for every program to comply exactly with the style guide - particularly games. To allow for this, three levels of compatibility are detailed. The lowest level of program is said to be *RISC OS Co-existent*, and applies to programs that will as a minimum work under RISC OS. Above this are *RISC OS Compatible* applications that can be run from the Desktop, and return to it unchanged afterwards, but which do not necessarily run within the Desktop. The highest level is *RISC OS Compliance*: a label applied to multi-tasking programs that follow the Style Guide.

However, to achieve RISC OS Compliance you do not need to follow every word of the Style Guide. Throughout, the guide uses the words 'must' and 'should' to refer to things that are essential and those which are just desirable. As a further let-out, the wording says that a RISC OS Compliant application "should *substantially* follow the Style Guide".

WHO IS IT AIMED AT

The RISC OS Style Guide is undoubtedly essential for all programmers writing commercial software. However, many other people writing programs for the Arc will benefit from the advice contained within the guide, and it is always nice to produce an application that has the look and feel of a professional product.

The *RISC OS Style Guide* is available from most Acorn dealers including Beebug Retail for £9.95 (no VAT). The Acorn part number is AKJ 18.

RU

Using ANSI C

Part 6: dbox Event Handlers

by Lee Calcraft

Last month we looked at the use of the function *dbox_fillin()* to maintain a dialogue box on screen. This function works by establishing its own event handler for the dialogue box window, and returns to the user when the box is cancelled or when certain types of icon are clicked on by the user.

In cases where *dbox_fillin()* does not respond to user activity which interests us, we must install our own event handler. Depending upon our requirements, we can use this instead of or in addition to *dbox_fillin()*. In the former case, we will need to make *dbox* global, since we cannot be sure that the box will be closed before we exit the function which puts it on the screen.

In what follows however, we will continue to use *dbox_fillin()*, so that the additional event handler which we install will act as a patch for *dbox_fillin()*.

There are in fact two different event handlers within the *dbox* suite. The first, installed with the function *dbox_eventhandler()*, is limited in its use, since it is only called when action icons are selected - i.e. the same set of icons to which *dbox_fillin()* responds. Moreover, with this event handler in place, *dbox_fillin()* no longer functions. So it is totally unsuited to the job in hand.

dbox_raw_eventhandler()

We shall resort therefore to the far more powerful *dbox_raw_eventhandler()*, which suffers from none of these drawbacks. Note by the way that the ANSI C 3 manual misspells this function name. The function takes three parameters: the *dbox* structure *dbox*, the name of the handler function that you are installing, and a void **handle*.

The handler function itself must be of the following form:

```
BOOL handler_func(dbox d,void *event,
void *handle);
```

If it is defined differently, you will be informed of a mismatch of pointer types during compilation.

A PRACTICAL EXAMPLE

The best way to illustrate how this works is through a practical example. We will develop a short piece of code to patch *dbox_fillin()* in such a way that clicking Adjust on a radio icon which is on does not leave all radio icons in the same ESG (Exclusive Selection Group) in an *off* state. There are very few occasions where a set of radio icons are all required to be *off* simultaneously (arguably, following the radio waveband selector metaphor, there should be none), but *dbox_fillin()* offers no help here. Our patch will fix this.

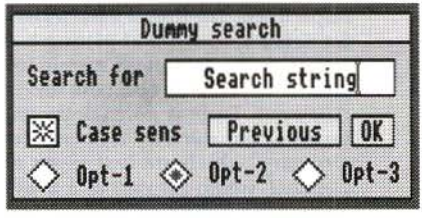


Figure 1. The Search dialogue box with the three new radio icons

To keep things simple, we will use our Search dialogue box from last month. This will need to have a set of three radio icons added to it (see figure 1). Load last month's Templates file into FormEd, and create a new icon (icon number 5). Of its icon flags, only the following four should be ticked:

Text
Sprite
V centred
Indirected

The Text entry should say "Opt-1". The Sprite entry should be left empty, but moving across *Indirected*, you should tick *Valid*, then move across this entry to enter the following validation string:

```
Sradiooff,radioon
```

The spelling and positioning of the comma are vital here.

Now set an ESG of 2 (the OK button uses 1), set the button type to *Radio*, and use Adjust to adjust the size of the bounding rectangle until the icon looks right. When all is well, replicate this icon sideways twice over, and edit the text of the new icons 6 and 7 to read "Opt-2" and "Opt-3" respectively. Now move the three into the correct positions, and save the edited template file.

Very few modifications are needed to the original program. We need first of all to add the following two lines somewhere after the creation of the dialogue box (in the definition of *cd_search()*), and before it is put on screen with *dbox_show()*:

```
dbox_setnumeric(d,4+option,TRUE);
dbox_raw_eventhandler(d,our_event_hand
ler,0);
```

The first line simply turns on the radio icon associated with the currently selected option. You will need a line something like:

```
int option=1;
```

early in the source to declare option as a global integer, and initialise it to a value of 1.

The second line establishes the function *our_event_handler()* as the raw event handler for the dialogue box. Note that we have given a handle of zero, since in this simple program there is no other data which we want to pass to our handler. The handler function itself is defined as follows:

```
static BOOL our_event_handler(dbox d,\
    void *event, void *handle)
{
  wimp_eventstr *e=(wimp_eventstr *)\
    event;
  wimp_i icon;

  if (e->e==wimp_EBUT &&\
    e->data.but.m.bbits==wimp_BRIGHT)
  {
    icon=e->data.but.m.i;
    if (icon>4 && icon<8 &&\
      dbox_getnumeric(d,icon)==0)
    {
      dbox_setnumeric(d,icon,TRUE);
      return TRUE;
    }
    return FALSE;
  }
```

This function is passed a pointer to the *wimp_eventstr* structure, though the initial casting is necessary because the pointer passed to the function is of type void * rather than *wimp_eventstr* *.

From this structure we can extract the button pressed by the user:

```
e->data.but.m.bbits
```

which we test for a match with *wimp_BRIGHT* (a click of the Adjust button), and the number of the icon selected:

```
e->data.but.m.i
```

If the button pressed was Adjust, and the icon number matches that of any of the three radio icons (numbered 4, 5 and 6), then we set the field back to Selected again, so as to cancel out the effect of Adjust. We also return TRUE to indicate that there is no need for the particular event to be passed further up the chain.

This all works very effectively, and the technique can be extended to patch *dbox_fillin()* in any way that you choose. Moreover, exactly the same technique can be used for establishing more permanent dialogue boxes.

The one thing that we have not yet included in our code is a line to pick up the number of the icon selected by the user. Adding the following (much split) single line will do the trick:

```
for (option=3; option>1 &&\
  dbox_getnumeric(d,option+4)\
  ==NULL; option--);
```

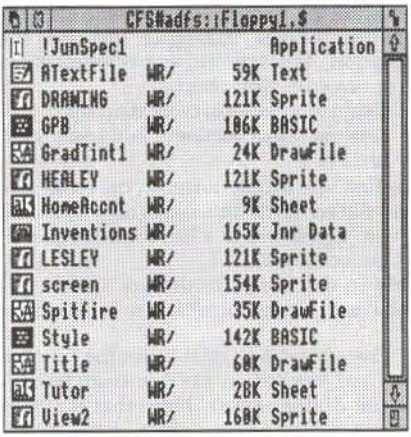
All this needs to do is to cycle through the three icons, assigning the value of the variable *option* according to which icon is *on*. But note that we have run the loop in reverse order here, and made it stop at 1 rather than at zero, so as to automatically assign the value 1 if no icon is turned on. In fact, if our event handler is functioning correctly, this should be impossible, but there are few places where the old addage *better safe than sorry* is more appropriate than in C programming!

RU

DOUBLE DISC CA

For under £60

The floppy disc on the left holds 2 files totalling 757,502 bytes. Using compression, the floppy disc on the right holds 15 files totalling 2,032,669 bytes.



At only £49 + VAT (£57.57 inc)
It's almost too good to be true!

Compression

The file compressio

YOUR
PACITY

A new utility that provides completely transparent file compression and decompression. Compatible with ADFS, SCSIFS, IDEFS, and NFS allowing all file operations to occur as normal, except that it compresses the data as it is written to disc, and decompresses it again when read back. It uses LZW adaptive compression that adapts itself to the type of data so that, on average, this can achieve compression of 2 or 3 to one for most types of data -

In other words, you can fit twice as much data on your disc, hard or floppy, as you would normally!

And unlike any other compression utilities it's lightning fast and works exactly like all other filing systems and is compatible with all application programs.

Computer Concepts Ltd

Gaddesden Place, Hemel Hempstead, Herts, HP2 6EX.
Tel.: 0442 63933 Fax.: 0442 231632

tility for the Archimedes

Hints & Tips. . . Hints & Tips

Hints and Tips on almost any subject relating to the Archimedes/A3000/A5000 series are always welcome. All published hints are paid for.

CLOCK MONITOR SAVER

Kell Gatherer

There are various applications which are designed to prevent burn-in on your monitor. A cheap and cheerful monitor saver can be made out of the Clock application found on Applications disc 2. Simply insert the following lines into PROCnudge (found at line 1100).

```
1171 IFs%MOD15<>0 ENDPROC
1172 q%!0=clock%:SYS GetW,,q%
1173 x0%=q%!12-q%!4
1174 y0%=q%!16-q%!8
1175 q%!4=RND(1238-x0%)
1176 q%!8=RND(980-y0%):q%!28=-1
1177 q%!12=q%!4+x0%
1178 q%!16=q%!8+y0%
1179 SYS OpenW,,q%
```

Now the clock window will appear at a different part of the screen every fifteen seconds, and making the clock window bigger will reduce wear on your monitor. The time interval can be changed in line 1171, e.g. s%MOD30 will give a time interval of 30 seconds.

PRINTING WITH THE PRINT KEY

Ben Avison

An underused feature of many programs that use printer output is that the Print key (just to the right of the function keys) will bring up the Print dialogue box. This works with Ovation, Impression, Poster, DeskEdit and Draw1½ (but not with Draw).

DEBUGGING WIMP PROGRAMS WITH VDU 4

Nick Smith

When debugging Wimp applications in whatever language, it is useful to see what is going on while they are running (for example the values of variables or which section of the program is running). A very quick and simple method is to print to the top left corner of the screen using:

```
VDU 4:PRINT TAB(0,0);variable%:VDU 5
```

(or its equivalent in your particular language). This makes debugging very much easier, and if you want to trace a procedure execution then place PRINT "1", PRINT "2"... statements at important places in the code. Also, if your program is doing lots of things quickly, you can then hold down the Ctrl key to slow it down and examine the variables. See *"Debugging the Wimp"* (Volume 4 Issue 7) for more details.

COMMENTS IN ASSEMBLER

Robert Carter

When programming in assembler, the semicolon character and the backslash character "\" can both be used to "REM out" lines (useful when debugging programs). But there is a pitfall. The following line:

```
;MOV R0,R1:STMFD R13!,{R0-R5}
```

has been commented out, and as such should not be assembled in the program. However, the semicolon and the backslash only "REM out" up to the end of the line or the next colon character (whichever comes first), so when two assembler instructions are separated by a colon (as in the above example), then the first instruction is not assembled, but the second one is. This can create problems which are hard to track down - you have been warned!

FILETYPE UTILITY

G.C.Wraith

The following 76 byte utility, which is run by entering **?ftype <*arg*>**, will set a numeric system variable called *ftype* to the filetype of the file given in the expression <*arg*>. This may be useful if (for example) you have an empty application stuck on the icon bar under TinyDirs and you want to perform different actions according to the filetype of the file dragged onto its icon; then the !Run file could contain the following, for example:

```
?ftype %0
If <ftype>=&FFF Then Run DoText %0
If <ftype>=&FFB Then Basic -load %0
```

The utility is created by the following:

```
10 REM >ReadTyper
20 DIM P% 76
30 [
40 .start
50 MOV R6,R0:MOV R0,R1:MOV R1,R12
```

```
60 SWI "XOS_GSTrans":MOVVS PC,R14
70 MOV R0,#17:SWI "XOS_File"
80 MOVVS PC,R14:CMP R0,#1:MOVNE PC,R14
90 MOV R0,R2,LSL#12:MOV R2,R0,LSR#20
100 MOV R1,R12:STR R2,[R1]:MOV R2,#4
110 MOV R3,#0:MOV R4,#1:ADD R0,R6,#1
120 SWI "XOS_SetVarVal":MOV PC,R14
130 .end
140 ]
150 SYS "OS_File",10,"?ftype",&FFC,,sta
rt,end
160 END
```

PROTEXT DATE

Peter Hopkins

For users of ProText on the Archimedes, if you wish the current date to be printed automatically in your letter heading, then put as the first line of your letter:

```
>SV date=SYS_DAY+" "+SYS_DATE
```

Then at the point where you want the date to appear in your letter put:

```
&date&
```

The date printed will be a fuller version than that given by Alt D:
Alt D gives 4 July 1991
&date& gives Thursday 4 July 1991

BASIC HELP

Ian Tidd

The Basic HELP command can be used to get individual help on Basic keywords, Ian Tidd reminds us. If you postfix the command with a full stop (i.e. HELP .) then a very useful "landscape" list of all Basic's keywords is displayed. This can be printed out for a quick-glance list of keywords with associated help.

CONFIRMATION CALL

Andrew Gordon

The short function that follows requires no parameters and can be useful in programs that require a yes or no answer to a question. A call to this function waits for Y or N to be pressed (not case sensitive). If the pointer was previously displayed, then it turns into a mouse shape; pressing Select is the same as replying Y, and any other button the same as N. The function returns TRUE for yes and FALSE for no.

```
1000 DEF FNyes
1010 LOCAL answer
1020 REPEAT
1030 SYS "OS_Confirm" TO answer
1040 UNTIL (answer=121) OR (answer=110)
1050 =(answer=121)
```

ADR DIRECTIVE IN ASSEMBLER

Jaya Haslam

When the ADR directive is used in a large assembler program (for example to load the address of a block of data into a register), it only has a one in four chance of working. The assembler translates the ADR into an ADD or a SUB, calculating the distance between the PC and the location as an immediate constant. Hence if this constant is greater than 1024 it must be divisible by 16 to avoid the error message **Bad immediate constant**. Thus to load a register with the address of a distant location, say *loc*, you must use:

```
.locpoint EQUD loc
.
.
LDR R0,locpoint
```

This has the same effect as ADR R0,loc but is slower to execute (as memory has to be accessed). Note that the distance between *locpoint* and the LDR instruction must be less than 4096 bytes in either direction, but this should not be a problem as *locpoint* can be any distance from *loc*.

NO SPURIOUS OUTPUT

Mark Moxon

Running some programs creates output on the screen (for instance the RISC User Toolbox and Floating Point Emulator both announce their presence when run, and the Fonts application lists out the fonts available when double-clicked on or run from a boot sequence). To prevent this unwanted printing you can redirect the command's output to the null device, which swallows all input, by putting *{ > null: }* after the command. For example, in a boot sequence you would put:

```
adfs::HardDisc4.$.!Fonts { > null: }
```

RU

will use much less space. The opportunity to increase the capacity of a hard disc by 30% to 50% at low cost is one not to be ignored.

If you have a floppy only system, then you will already have a collection of discs. Using file compression should enable you to reduce the number of discs, but is that important? I would suggest that the facility to have a much larger collection of files (clip art library, say) on a single disc could be useful. You must think carefully whether you will benefit from such software.

Assuming you decide that the benefits are worthwhile, is Compression the one to go for? It is certainly easy to use, and its pseudo filing system approach makes the whole process largely invisible. However, ArcFS in its new improved form offers enhanced compression capability while still maintaining compatibility with the popular Spark compression utility.

I have to say that like most, if not all, of Computer Concepts products, Compression does its job exceedingly well, and is highly professional. It makes the whole process of file compression very simple. On the other hand, ArcFS costs a mere £6 and has Spark compatibility, and I quite like its no-nonsense approach and distinctive Archive icon. It is up to the reader to make a choice.

Product	*Compression*
Supplier	*Computer Concepts* *Gaddesden Place,* *Hemel Hempstead,* *Herts HP2 6EX.* *Tel. (0442) 63933*
Price	*£57.57 inc. VAT*
Product	*ArcFS (Disc 34)*
Supplier	*David Pilling* *P.O.Box 22,* *Thornton Cleveleys,* *Blackpool FY5 1LR.*
Price	*£5.99 inc. VAT and p&p*

RU

Break the A310 RAM barrier. (And the price barrier too)

2Mb - £99

Educational and quantity discounts are available.

There is also a 4Mb version. The 2Mb card may be upgraded later to the full 4Mb. Compatible with ARM3s, backplanes, hard discs etc. Low power consumption. High quality four-layer circuitry. No quibble money-back guarantee.

Prices exclude VAT. Further information and free price list from;

A3000 memory corner

Upgrade to 2Mb	£55
Upgrade to 4Mb	£148.95
Bare board	£25.50

These upgrades are very easy to fit, and use just 8 chips to minimise power consumption. The bare board has high quality turned pin sockets for the RAM chips.

Hard disc upgrades

We can supply a range of fast hard disc upgrades for the Archimedes and A3000. Example SCSI drives;

50Mb - £310 100Mb - £420 200Mb - £620

VISA **IFEL, 36 Upland Drive, Derriford, Plymouth PL6 6BD. (0752) 847286**

Technical Queries ??

Alan Wrigley throws some light on problems which can occur when Basic programs run out of memory.

Dear Sir
Running a Basic program recently produced the error "Too many nested structures". I assumed this meant that the program contained deeply nested loops, but on examination there were no loops nested to a depth of greater than three or four. Have I misunderstood the error?
Robert Molesey

This is one of those errors that can cause a great deal of confusion, and can take a lot of time to track down. It does indeed mean that there are loops in the program nested to a depth greater than Basic can currently handle, but what you need to understand is that this is entirely dependent on the amount of memory available.

Each time Basic meets a statement signalling the start of a loop (FOR, REPEAT or WHILE), it places the address of the following statement (i.e. where the program will return to if the loop is to be repeated) on the Basic stack. This is an area of memory maintained by Basic within its application workspace, and used to store, among other things, addresses to which the program will need to return, such as the start of a loop, or the point at which a procedure or function is called. This stack can continue to grow as long as there is sufficient memory, but once all the available memory is used up, an error will be generated the next time the stack would be used. This could be "Too many nested structures", or some other error such as "No room for procedure/function call".

The point is that, if there is very little memory available in the first place, this error could occur after only a few nested loops have been encountered, and it appears that this is what is happening in your case. Needless to say, though, if the program structure is faulty, and allows infinitely nested loops, it will crash however much memory is available. For example, the following procedure:

```
DEFPROCwrong
FOR loop%=1 TO 2
PROCwrong
NEXT
ENDPROC
```

is doomed from the start because the loop will nest indefinitely.

If the program structure is correct, it could be that the WimpSlot setting is not quite high enough. When determining how large a WimpSlot to set, you must allow for Basic's own workspace (currently &F00 bytes), space for variables declared within the program, blocks of memory dimensioned (which with a Wimp program could be several) and of course the stack, as well as the length of the program itself. It is always better to err on the safe side.

A less likely, but still very possible cause of your error is a repeated DIM statement. If you run the following program:

```
REPEAT
DIM block% 1024
FOR loop%=1 TO 2
NEXT
UNTIL FALSE
```

you may get an error which reads "No room for this DIM", or you may get the "Too many nested structures" error, depending on whether memory runs out before executing the next DIM or the next loop.

As you will see from all this, memory management is a tricky business, and what at first sight seems a straighforward error may in fact be caused by something far from the apparent scene of the crime. RU

ARE YOU GOOD ENOUGH?

As the leaders in software for the Archimedes range of computers, CLARES MICRO SUPPLIES are looking to extend our range even further. We are looking for people who are as excited by the Archimedes as we are.

If you have written any programs, completed or not, then we would like to hear from you.

If you have any ideas for programs and have the ability to execute the ideas then we want to hear from you.

If you have the ability to program the Archimedes but not the ideas to program then we want to hear from you.

Programs can be written in any language as long as they perform their stated task. Many of our programs contain large chunks of BASIC with ARM code in the areas that it is needed. BASIC on the Archimedes is a very powerful language and we do not attach any snob value to its use. If your program does what is meant to do then thats all we are interested in. Why not join the top team on the Archimedes. You get the support of our in-house team, privileged access through us to Acorn and invitations to our informal programmers seminars.

The most important point is that you will be earning top royalty rates of if you prefer we will purchase your program outright.

Please write, in confidence, to Mr. D. Clare at:

Clares Micro Supplies,
98 Middlewich Road,
Northwich,
CHESHIRE CW9 7DA

If you have a program either complete or in development then please enclose a copy for our evaluation.

To protect yourself we advise that you lodge a copy of the program with your bank or solicitor BEFORE you send us a copy. You can then prove that your program pre-dates anything that we have.

Act today and become part of the leading software team producing software for the worlds fastest micro.

SCIENTIFIC SOFTWARE - A FINAL COMMENT

As the author of FIRST, which is regularly advertised in RISC User, I have been reading the correspondence in Postbag regarding scientific software. Dr.Cumming and Dr.Dawson do indeed highlight what I feel to be a sad and inexplicable gap in the software for the Archimedes range. It is my continuing intention to attempt to fill at least part of that void, and judging from customers' reactions, FIRST seems to have done quite a good job already.

However, a substantial number of people have said that FIRST is too advanced for their needs. In response, I have now launched a lower cost product that nevertheless contains a powerful array of statistical techniques, and this will be advertised shortly.

Dr Dawson's comment on the lack of a RISC OS front end is absolutely valid. I comfort myself from the fact that much larger software houses use 'hot keys' to bypass the Desktop. Perhaps some day FIRST will emulate their RISC OS compliance, but for the present the keyboard will have to suffice.

Dr.Dawson's final comments on a comprehensive graphs/stats package may, I fear, go unremarked by the big software houses. They probably realise that an understanding of professional grade statistics does not come readily to most programmers - and not many professional statisticians are likely to engage in professional programming. Meanwhile, I do my best.

G.R.Edwards
Serious Statistical Software

Perhaps the correspondence on these pages shows that there is undoubted interest in this area. We certainly feel so, and RISC Developments is launching its own graphs and charts package, ChartWell (see details in this issue).

SOFTWARE PROTECTION

Further to the debate on software protection I would like to add the following points. I seem to remember a game called XOR which was first distributed free with a magazine. The disc could be booted up three times allowing play of the first two levels. Thereafter, if you wished to play further levels you had to send payment to the publishers who issued a new code enabling the full game to be played. Surely software publishers could protect their software in a similar way, allowing one copy only to be made from the original as a backup. Should the original become corrupt, then the backup could be used while you wait for the original to be replaced. A registration scheme could also be used. Password protection could also be invoked. This would only be a minor inconvenience to the user, but would secure against unauthorised access. On the subject of dongles, the more software using this method the more hassle for the user. Imagine the continued swapping for each program used.

M.Whiteman

Software protection is always a somewhat controversial subject. Software developers need a cheap, simple and reliable method of protection that is acceptable to the majority of users, assuming that protection is justified. What is difficult is that a method which can seem quite acceptable to one user can appear as an inconvenience to another. However, the needs and consequences of software protection are likely to remain as long as there are those prepared to copy and pass on software illegally, depriving software developers of the income to which they are reasonably entitled. Without software piracy, software might also be cheaper and the majority of users might benefit.

RU

RISC User Public Domain Library

We now offer 47 discs from RISC User Public Domain Library, and we will continue to add further titles in the future.

We also offer a **Sampler** disc with a selection of public domain programs from all areas of interest.

Our Public Domain discs contain as near as possible to 800k (and not less than 700k).
Each disc includes a 'Read Me' file, and there are some instructions with the programs.

It is our policy with our Public Domain Library that the Public Domain discs are available only to RISC User members for **£3** (postage is £1 for the first disc and 50p for each additional disc). The discs are offered as seen, and we cannot enter into any discussion regarding their contents.

To order phone **(0727) 40303**,
Fax (0727) 860263, or write to (quoting your membership number):

RISC Developments, 117 Hatfield Rd, St. Albans, Herts AL1 4JS

DEMOS

PD12 Disc
Five sound and graphics demos from Hugo Fiennes of the Serial Port. All five are stunning examples of what the Arc is capable.

PD21 Disc
Three demos, Balls, Balls2 and BIA-Tetris. The latter is a game as well as a demo.

PD22 Disc
Three demos, Noah, Chips and Demo01.

PD23 Disc
Four demos, Bounce, Crimbo, ColDemo and Rotate.

PD24 Disc
Three demos, Demo, Gopher and Overscan.

PD25 Disc
Four demos, Deskballs, DudsDemo, EgIntro, and Z-Brother.

PD26 Disc
Four demos, Sister, SkullDemo and Wibble.

PD27 Disc
Two demos, GrannyChow and Windows

PD36 Disc
Three demos, Leapin' Fish, SinDemo and Swallow.

PD37 Disc
A massive four-part demo called 'No RISC No Fun'. This has to be the best demo yet for the Arc. Amazing!

PD42 Disc
4 demos, AceDemo4, Cubitus, Scorpius and 3D_RayPic.

GRAPHICS

PD13 Disc
The !Projector application - displays films created with the Ace Computing Mogul package. Six example films are included.

PD18 Disc
A program which displays several still and animated ray traced pictures.

PD33
Disc Contains a program that displays several still and animated ray traced pictures.

PD44 Disc
A selection of fractal generation programs and utilities.

PD45 Disc
Two applications, Creator and Translator, which allow the exchange and display of graphics picture files between the Archimedes and other computers. Along with these are some high quality demo pictures. Also included are a mode converter and a mode utility allowing multisync modes to be displayed on a non-multisync monitor.

DRAWING AND ART

PD15 Disc
Arctist+ and BigM, both 256 colour art packages, along with Design, a symmetrical pattern designer.

PD41 Disc
Four applications: 'Display' allows the display of Draw files by dragging them into a window. 'Drawplus' is an object oriented drawing package that may be used as an alternative to Acorn's Draw supplied with your Archimedes or A3000. Drawplus has many enhancements over Draw. 'Drawstrip' is a program to enable the easy creation of function keystrips using Draw. 'Drop' enables Draw files to be rotated in 3D and then saved again in their new perspective.

EDUCATION

PD14 Disc
!REG, a student register system which replaces classroom registers. A system for managing the recording and reporting required by the National Curriculum and data files for Pipedream for NC statements of attainment in science.

MUSIC

PD01 Disc
Soundtracker playroutine plus the following tunes: Aces-Hi, Acidbat2, Afl, Alf, ArtNoise, AxelF, Backpopped, Big, Blitzwing, Blizzard02.

PD02 Disc
Soundtracker playroutine plus the following tunes: BatMix, Bobby, Brill, Burning, Chartmix, Chipgene, Demo2.

PD03 Disc
Soundtracker playroutine plus the following tunes: Confusion, Crack, Criminal, Dear, Demons, Dns, Elephant.

PD04 Disc
Soundtracker playroutine plus the following tunes: Doc1, Funky, Ducksong, Electric_2, EndTheme, Enutomed, Equinoxe5, FinalTFDMI, FinalVis.

PD05 Disc
Soundtracker playroutine plus the following tunes: Fyc, GoodTune, Hello, HowDeepIs, Huba, Humanoid, Hunters, Hymn, Idea, Igarun, IntoB.

PD06 Disc
Soundtracker play-routine plus the following tunes: Jazzid, Jmi_China, LastNinja2, Like, Magnetic4, MegaForce0, Minimize, Mod, New_Biz.

PD07 Disc
Soundtracker playroutine plus the following tunes: MyWay, Nothing-2, Oooerr, Outrun, Pacman, Pat, PetShop, Pretend, SaySaySay2, Steeve

PD16 Disc
230 tunes for loading into the music package Maestro, with enough variety to suit most tastes.

PD08 Disc
Soundtracker playroutine plus the following tunes: Setrox, Tarzan, TGM, TheModel2, TjatMikes, Toccata, Unit, Vprtex, We're, Yezz.

PD09 Disc
Soundtracker playroutine plus the following tunes: Acid_House, Bananas, Cambod, Crok, Cute, Dallas, Deadlock, Dragnet, Yazoo.

RISC User Public Domain Library

PD 10 Disc
Soundtracker playroutine plus the following tunes: DemoSmash, FFSound, Five, GSCTheme, HiEnergy, Oxygene2, Piano, PopCorn, PumpUp.

PD 11 Disc
Soundtracker playroutine plus the following tunes: Rescue, Rockit, Round,Scratch, Scratch2, Show, SmokeOn.

PD 40 Disc
The Jukebox playroutine plus the following Tracker tunes: Acid House, TeddyBears, Canon, Breathe, Six2, Rag It.

PD43 Disc
An application called Coconiser, very similar to Tracker, that allows the creation of tunes by sequencing digitally sampled sounds. Demo tunes are included on the disc.

PD46 Disc
The Jukebox playroutine plus the following Tracker tunes: Beginning, Blue Peter, Frog Song, IceIceBaby, Monty Mix, Over The Bow, Rawhide, SkyXmasMix, Thunderbird

PD47 Disc
A selection of SoundTracker and Tracker playback routines and utilities including a keyboard and spectrum analyser.

TRICKS AND NOVELTIES

PD 17 Disc
A collection of 27 amusing trick and novelty programs. Some of them produce the weirdest effects!

PD 32 Disc
Contains an application called Cookie. When run, it puts up a window containing a 'fortune cookie' or a well-known saying or piece of philosophy. Be warned! This program is very addictive once seen, also rather zany not to mention, occasionally saucy! There are some 6000 sayings. Also on this disc is a scroll text demo with soundtrack music called Invade that also features a space invaders game within it.

UTILITIES AND APPLICATIONS

PD 28 Disc
20 utilities of various types. There is something here no doubt to please everyone. Space does not permit full descriptions but the file list is, 1stFile, ASm2, CloseUp, Crypt, Dir, Display, Drawlink, Dustbin, Filetypes, FileUtils, Find, Keys, Loadprogs, MultiPrint, NewBar, NewCodes, PD_Impress, PrinterTx, ProgCalc, and Set_Type.

PD 31 Disc
17 utilities and applications. There is plenty on this disc to choose from and should find favour with most people. Brief description of the list is as follows: Address Book, Address Labeller, DiscSpace Display. Desktop Calendar, Cassette Inlay Printer (Two of these!), DFS Disc Reader, Automatic Application Creator, Arc to Psion Transfer, ROM Speed-Up, STD Codefinder, System Utilities, Trash Can, Front end for Twin, Front end for View, Volume Controller, Control of Pointer by keys.

PD 38 Disc
15 utilities and applications. These are a 1st Word Plus file converter, a 1st Word Plus printer driver for Star LC200, a text outliner application, a hypertext program (like Genesis), a CD database, a video tape database, CMOS RAM saver and loader, disc sector editor, fast formatter, font printer, file save reminder, a COPY options setter, and TEXT to DTPfile converters, plus a print spooler.

CLIPART AND PICTURES

PD 29 Disc
Over 4 megabytes of Sprite pictures which can be used as clip art to load into DTP or use in your programs. The files are naturally in a compressed form and the disc contains the file to uncompress them together with instructions.

PD 30 Disc
Over 2 megabytes of Sprite clip art and Draw files to load into DTP or use in your programs. The files are naturally in a compressed form and the disc contains the file to uncompress them together with instructions.

FONTS

PD 35 Disc
Eleven PD outline fonts for use in RISC OS applications such as WP and DTP. These are, Stencil, American Typewriter, Bodoni, Brushscript, Cooper Black, Fritz Quad, Garamond, Hull, London, Optima and Revue.

COMMS

PD 34 Disc
Arcterm3, a full comms software package. Arc100, a scrolling text terminal. Grapevine, another scrolling text terminal but multi-tasking. TaskData, a multi-tasking viewdata comms package. Download, an application for transferring files between machines via serial port.Timer, a utility for recording on-line time and call cost. The latest version of Sparkplug, the file decompression program. Along with these is a complete set of programs for running a bulletin board system on your Archimedes.

GAMES

PD 19 Disc
10 games: Adevnture, Battle, Battleships, Connect4, Darts, Fish (Pelmanism), Fruit Machine, Golf, Hangman and Impact.

PD 20 Disc
12 games: Invaders, Line Of Five, Othello, Pelmanism, Rocks, Rubik Cube, Simon, Solitaire, Star Trek, Tetris, Tile Trial and Yahtzee.

PD 39 Disc
6 games: Pac Man (in a window!), Arc Patience, Breakout (inside an icon!!!), Creepie (Centipede), Pelmanism and International Golf (Brilliant!)

Public Domain Sampler Disc (PDS1)

Ccontains sample programs from the Beebug Public Domain Software Library.

SOUNDTRACKER
The Soundtracker application is used to play back a music file ***Toccata*** made of real sampled sounds which are sequenced to form a complete tune lasting several minutes. The quality of this is quite stunning, particularly if played through the computer's monitor speaker, or a hi-fi system.

ACCOUNTS
This is a home accounts program. There are no instructions included with the program but all functions are selected from the main menu which is self explanatory. An example file is included.

SC LABEL
A versatile disc labelling program producing professional looking labels for 3.5" discs. A Help file is included with the program.

FOLLOW
A novelty program that when run puts a pair of beady eyes on the Desktop which follow the mouse pointer wherever it goes. Eerie!

HANGMAN
A well presented and implemented version of the old word game of Hangman with an animated finale.

MULTIPRINT
A utility to allow the printing of files by creating a task list of the files to print before sending them to the printer. A Help file is included within the program.

ROTATE
A fascinating animated demo in which you can alter the effects by pressing a few keys on the keyboard.

STD
A useful utility to search for telephone STD codes or find a town from its STD code. A ReadMe file is included in the program.

WANDA
A novelty demo program that infests your Desktop screen with a shoal of bubble-blowing goldfish!

Personal Ads

A310 colour with 2 slot backplane and fan, BEEBUG 5.25" disc interface, RISC OS, manuals, all in original packaging, games; Zarch, UIM, Worldscape and Quazer £650. Tel. (0299) 270443.

Cambridge Z88, 128k additional RAM card, mains adaptor, lead and software for Archimedes connection, manual £165 o.n.o. Tel. 081-886 4040.

Acorn 20Mb drive and podule (A310) £125, 1st Word Plus V2 £20, Wingass Assembler £15, System Delta Plus V1 & guide £15, Autosketch V1 & guide £20. Tel. 081-679 0805 after 3pm.

A440 4Mb RAM, 512k fast ROM, new mouse, VIDC Enhancer, 20Mb HD, 2x3.5" floppies boxed with manuals, as new, plus over 100Mb of software (Line Art, programs, utilities, demos, compilers, etc.) £1150. Tel. (0908) 614495.

RISC OS programmers reference manual £50, Wonderland (The Ultimate Adventure) £16, The Pawn (Adventure) £16. Tel. (0926) 421332.

Archimedes software; Magpie £30, Genesis II £100, Schema £60, Wonderland £20, all originals in perfect condition. Tel. (0823) 283346.

A310 colour system with 20Mb hard disc, First Word Plus, PC Emulator, ENGI-C Compiler, reference manuals etc. £799. Tel. (0734) 314623.

A310 with colour monitor and external 5.25" disc drive, good condition. Offers (0795) 421125.

A3000 with colour monitor, includes monitor stand, serial upgrade, 5.25" interface card and ribbon cable, also Panasonic KX-P1124 24 pin printer, software; Interword, Alphabase, games, clipart, PD collection, all for £775. Tel. (0475) 41119.

WANTED: Fractal enthusiasts/programmers to share ideas and programs and to assist in the development of a comprehensive RISC OS fractal program, send an s.a.e. and a blank formatted disc (or sample programs) to Joyce Haslam, 112 Keighley Road, Colne, Lancs BB8 0PH.

A3000 Learning Curve, hardly used 11 months old, colour printer, word processor etc. cost £1300 accept £850 o.n.o. Tel. (0727) 830444.

A410 base system, dealer upgraded to 4Mb RAM, 43Mb Seagate hard disc, VIDC enhancer (Atomwide), I/O Podule (Acorn) and 5.25" drive interface (BEEBUG), includes extensive selected software (PC Emulator, PC-Access, ArcDFS, Investigator II, WomaCAD, Tracer and PD, 12 months old light home use, as new condition, boxed with original manuals, owner upgrading, any trial £1150 o.n.o. Tel. (0782) 412515 extn 4034 day or (0782) 771914 eves & wkends.

Star LC-10 printer with several ribbons £65, BEEBUG 'C' Development system £50, both as new condition. Tel. (04243) 4500.

C.C. ROM/RAM board with Interword, Spellmaster ROMs, 128k RAM chips £50, A4 sheet feeder for Mitsubishi MH216AF scanner (e.g. C.C. Scanlight A4 or BEEBUG Scavenger) £40, also BBC EPROM Programmer £35, BBC joystick £5. Tel. (0232) 382273 after 6pm.

Digitising Tablet, TDS LC12 professional quality tablet with a 12"x12" active area, 4 button puck and power supply, configurable upto 400 lines per inch resolution, various data formats and baud rates, serial or parallel connection £110. Tel. (0903) 65727 eves.

A410, 47Mb hard disc, 4Mb RAM, orginal boxed condition, loads of software £1400. Tel. (0249) 813209 after 6.30pm.

Issues 1-39 of BEEBUG, also many 1982-85 issues Acorn User, Micro User and A&B Computing, all in mint condition. Tel. 081-998 2223.

A310, 4Mb RAM, 20Mb hard disc with Acorn colour monitor and user guide, also Genesis, First Word Plus, and Acorn DTP all for only £975; also Acorn IP150 300 dpi bubblejet printer or Citizen Swift 24 pin colour printer only £200, all very good condition. Tel. (0730) 60277 eves.

Archimedes upgraded to 440/1 specification, 4Mb memory, 40Mb hard disc, £925, 14" Eizo 9060S Flexiscan monitor £325 extra. **WANTED:** Master reference manuals. Tel. (0786) 61501 eves and weekends.

A3000, 2Mb upgrade, serial port upgrade, Acorn colour monitor, monitor stand, Epson printer and all leads, manuals and discs all for £800 o.n.o. Free delivery and setup within 50 miles. Tel. Aldershot (0252) 345641.

Interword & Spellmaster on disc (boxed & manuals etc.) for Archimedes/A3000 £18 each, book ' Understanding Interword' £5. Tel 081-318 3995 anytime.

A310m colour with RISC OS, PC Emulator, Twin, Interdictor II, all manuals & 5.25" disc interface, also all RISC User mags up to September '91 £600. Tel. (0635) 872702 anytime.

A310, 2Mb RAM, (Atomwide upgrade), 20Mb HD (Oak SCSI), Electrohome Multiscan monitor & lots of software £900 o.n.o. Tel. 081-579 0607.

Z88 EPROM eraser, EPROM, Spellmaster, 160k RAM & cables, Brother HR-5 A4 battery operated printer only had light use from student, will split £250, also 3.5 Mb or Arc clipart only £4. Tel. (0761) 232238.

A410/1, 4Mb RAM, 42Mb hard disc, new mouse, PC Emulator, very good condition, boxed as new, also NEC Multisync II colour monitor, computer and monitor together now worth new £1700 (latest price), might be prepared to sell monitor separately, open to reasonable offers. Tel. (0886) 21457.

A310m colour system, RISC OS, First Word Plus and all manuals, mint condition £700 o.n.o. Tel. (0962) 847461.

Acorn Desktop C Rel. 4 £140, Tactic £5, ArcDFS, £5, Impression Business Supplement £15. Tel. (02407 71994.

A3000 Enhanced system comprising 2Mb RAM, 20Mb hard disc and additional 5.25" switchable disc drive installed in PRES housing, RS232 Serial port, Acorn colour monitor wired for sound, complete with Welcome & User Guides, cost over £1700, accept £1100 o.n.o. Tel. (0533) 570542.

A3000 computer upgraded to 2Mb RAM with Acorn colour monitor and a variety of software, £700, also an Epson printer with spare ribbons £75. Tel. (0603) 55303.

A310 colour system with RISC OS, 4Mb RAM and 45Mb Oak SCSI hard disc, CPU recently overhauled £995. (0742) 368797.

1st Word Plus, PC Emulator, Dr DOS, Acorn DTP, Genesis £25 each or £90 for all four. Tel. (0302) 744005.

Lemmings (brand new) £20, Nervyon £10, Twin World £15, E-Type £10, Bug Hunter in Space £10, all in excellent condition. Tel. (0279) 814448.

Panasonic KX-P1081 9pin printer, draft and NLQ, only light domestic use £85. Tel. (0296) 623700.

A310, 4Mb RAM, new 20Mb HD, Taxan multisync monitor, PC Emulator, software, manuals £850. Tel. (0306) 730067.

A310 colour, RISC OS, dual 3.5" drives, backplane with interface for 5.25" drive, PC Emulator, box, manuals, cables complete, good condition £450 o.n.o. Tel. (0276) 22031 anytime.

A410/1, RISC OS, 4Mb RAM, 45Mb Oak SCSI internal hard disc, ROM/RAM podule with battery back-up, PC Emulator, box, manuals, cables complete, good condition £750 o.n.o. Tel. (0276) 22031 anytime.

1st Word Plus issue 1, Artisan, Nevryon, Apocalypse, Powerband, Interdictor I & II, Twinworld, E-Type, Drop Shot, Chocks Away all boxed originals £110, will split. Six Archimedes World discs (about 1.4Mb software each disc) thrown in for a complete sale.

Australian Clip Art

Over 100 pictures to use in Projects/ Assignments about Australia !

Special Price Offer !

- **Cheque £9**
- **Cash £7**

Send cheque or cash to :

David Winton
19 Darri Ave
Wahroonga
NSW 2076
AUSTRALIA

Advertisers' Index

Ace Computing	36
Clares Micro Supplies	70
Colton Software	20
Computer Concepts	64,65
David Pilling	34
Electronic Font Foundry	12
IFEL	68
Keylink Computers Ltd	59
Longman Logotron	46
Media Design Interactive	58
Norwich Computer Services	32
RISC Development's Hardware	76
RISC Development's Software	4,8
RISC User Magazine Disc	42,43
RISC User PD Library	72,73
RISC User Products	See Supplement
RTP Technology	58
Serious Statistical Software	28
Silicon Vision	6
Spacetech	24
Topologika	59
Trail Software	54

RISC USER MEMBERSHIP

RISC User is available only on subscription at the rates shown below. Full subscribers to RISC User may also take out a reduced rate subscription to BEEBUG (the magazine for the BBC micro and Master series).

Renewal Subscription Rates	RISC User	RISC User & BEEBUG
UK, BFPO, Ch.Is	£18.40	£28.90
Rest of Europe &Eire	£27.50	£42.90
Middle East	£33.50	£53.10
Americas & Africa	£36.50	£58.40
Elsewhere	£39.50	£62.50

Please note that new subscription rates are £1.50 more than renewals.
All subscriptions, including overseas, should be in pounds sterling. We will also accept payment by Connect, Access and Visa, and official UK orders are welcome.

MAGAZINE DISC

The programs from each issue of RISC User, together with a number of substantial additional items, are included on a monthly 3.5" disc. This is available to order, or you may take out a subscription to ensure that the disc arrives at the same time as the magazine.

Disc Subscription Rates	UK	Overseas
Single issue discs	£ 4.75	£ 4.75
Six months subscription	£25.50	£30.00
Twelve months subscription	£50.00	£56.00

Disc subscriptions include postage, but you should add the appropriate rate (see below) per disc for individual orders.

BACK ISSUES (SPECIAL OFFER)

Back issues of magazines and magazine discs are normally available. All issues are currently still in stock except Volume 1 Issues 4&5 magazines. All subject to availability. Please include postage when ordering.

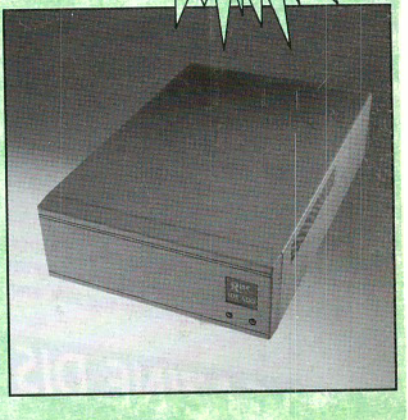
	Volume 1	Volume 2	Volume 3	Volume 4
Magazine	£1.00 each	£1.20 each	£1.60 each	£1.90 each
Disc	£2.00 each	£4.00 each	£4.00 each	£4.75 each

Post and Packing	UK, BFPO, Ch.Is	Europe plus Eire	Elsewhere
First Issue	£1.00	£1.60	£2.40
Each subsequent Issue	£0.50	£0.80	£1.20

RISC User & BEEBUG, 117 Hatfield Road, St Albans, Herts AL1 4JS.
Tel. St Albans (0727) 40303 Fax. (0727) 860263
(24hrs answerphone for Connect/Access/Visa orders and subscriptions)

IDE Hard Disc Upgrades
for the Archimedes & A3000

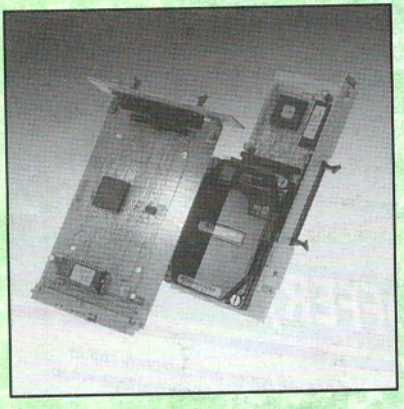
SPECIAL OFFER
A3000 Internal Drive
Now Only
£195 + Vat



What is IDE?
IDE (Integrated Drive Electronics) is the latest interface standard for connecting hard drives to personal computers and is used in the new Acorn A5000. Our drives all feature a memory cache system, which when coupled with our custom designed 16 bit interface give very fast access times indeed. Typically 50% faster than the Acorn ST506 drives used on the 300 & 400/1 ranges.

What drive options are available?
Archimedes 310, 440, 400/1 and 540.
Drive sizes currently available are 42, 89 and 105 Mbyte with a typical access time of 28ms for the 42Mb models and less than 20ms for the others.
These 3.5" drives are available as either internal or external units, and use our high speed 16 bit IDE interface card that fits in your podule backplane. External drives are attractively cased to match the computer and have their own internal power supply and fan. One interface card may be used to control both an internal and an external drive.

A3000
Our A3000 external solutions consist of the 16 bit IDE podule in a special metal podule box which fits to the back of your A3000 (under the monitor stand). Drive sizes are 42 Mb, 89 Mb or 105 Mb. We are also able to offer internal IDE drives for the A3000 that fit into the internal podule slot. These special 2.5" drives are available in 20, 42 and 89 Mb formats and have access times of 23ms.



Hard Cards
These are 2.5 inch hard drives mounted onto our interface card for fitting into a standard podule slot in a 310, 400 or 540 computer. They are particularly useful when you already have one internal hard drive and want another.

What does the future hold?
IDE is a relatively new interface standard, but has already gained massive support. It has been endorsed by Acorn in the A5000 and is clearly the way ahead for users of Acorn systems. The next few months will see drives up to 400Mbyte, with larger capacities, and devices such as tape-streamers following very soon. The future for IDE is very bright indeed.

Quality
You may have total confidence in our products. Only the best drives from recognised manufacturers are used, Conner, Seagate, NEC etc. All drive kits are supplied with full fitting instructions and a user guide to ensure that you will have no problems at all. Our interface conforms fully with Acorn's IDEFS specification.

Money Back Guarantee
If for any reason you are dissatisfied with one of these products we offer a full 14 days money back no quibble guarantee.

Description	Internal Stock Code	Internal Price	External Stock Code	External Price
Archimedes 42 Mb	5251	£259.00	5261	£349.00
Archimedes 89 Mb	5252	£379.00	5262	£469.00
Archimedes 105 Mb	5253	£459.00	5263	£549.00
Hard Card 42 Mb	5291	£495.00		
Hard Card 89 Mb	5292	£695.00		
A3000 20 Mb	5270	£195.00	N/A	------
A3000 42 Mb	5271	£495.00	5281	£359.00
A3000 89 Mb	5272	£695.00	5282	£479.00
A3000 105 Mb	N/A	------	5283	£559.00

All prices include High Speed IDE Drive Interface, Manual & Fitting Instructions.

All prices are Ex VAT

Available from your local dealer, or directly from RISC Developments (please add £9 carriage).

RISC developments

RISC Developments Ltd is an associated company of BEEBUG Ltd.

RISC Developments Ltd, 117 Hatfield Road, St. Albans, Herts AL1 4JS
Tel. (0727) 40303 Fax. (0727) 860263

This advertisement was produced entirely with Ovation DTP from BEEBUG